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October 17, 1990

Barbara Russell RCRA Enforcement Unit 5HR-12 U.S.EPA Region V 230 South Dearborn Street Chicago, Illinois 60604



Re: Closure Information - Croda Inks, Niles, Illinois Facility

Dear Ms Russell:

Enclosed please find a copy of the Closure Plan submitted to the Illinois Environmental Protection Agency for the container storage area and underground tank at the Croda Inks, Niles, Illinois facility. As I indicated during our phone conversation, all elements of the closure activities, including removal and proper disposal of all containers, removal of the underground tank and surrounding soils, testing of soils and cleaning of the storage pad have been completed with IEPA concurrence.

A question does remain as to the use of Attachment 7 for volatile compounds analysis which relates to the detection of methylene chloride in certain samples. Croda has never used methylene chloride at the facility and the compound was also detected in the laboratory blanks. At this point, Croda is re-analyzing several samples to determine if methylene chloride is in fact present. Once that issue is resolved, Croda believes it will have completed closure in accordance with all of IEPA's requirements.

I have also enclosed a copy of the sample results obtained through the closure activities for your information. If you have any questions with respect to the enclosed materials, please feel free to give me a call. I apologize for not providing you with these materials earlier.

Very truly,

Barbara Magel



Engineers & Scientists Environmental Services Waste Management Water Resources Site Development Special Structures Geotechnical Analysis

October 6, 1989 40045

Mr. Lawrence W. Eastep, P.E.
Manager - Permit Section
Division of Land Pollution Control
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: Revised Closure Plan Croda Inks Corporation Niles, Illinois

Dear Mr. Eastep:

Enclosed are four copies of the revised Closure Plan for the Croda Inks Corporation (Croda) requested by the Illinois Environmental Protection Agency (IEPA) in its August 31, 1989 letter to Croda. Presented below is Croda's response to each of the deficiency items listed in the IEPA's August 31, 1989 letter to Croda:

- 1. <u>Description of the Waste Management Units</u>. The drum storage area has been designated as SO1 and the former underground storage tank (UST) as SO2 and will be closed as two separate units. Separate "Description" and "Location of Samples" discussions have been included for each storage unit (i.e., Refer to Sections 1.4, 1.5, 2.2 and 2.3 in the Closure Plan).
- 2. Map of Facility. Figure 3 (i.e., Proposed Boring Location Map) is a schematic map, drawn to scale, of the facility which designates both storage units and other items of interest. Figure 1 is a United States Geologic Survey (USGS) map of the area which designates the township, range, etc. Section 1.3.1 of the Closure Plan also lists the township, range etc.
- 3. Detailed Drawing of the Unit(s). Refer to Item 2 above.

- 4. <u>Decontamination of Tanks, Structures and Soils</u>. Since the former UST was already removed in December of 1988, this section is not applicable. Potential remediation alternatives are discussed in Section 4.3 of the Closure Plan.
- 5. Soil Cleanup Levels. The IEPA's March 2, 1989 Closure Plan Instructions lists the clean closure final objectives as "drinkable leachate" and "edible soils." It goes on to reference the United States Environmental Protection Agency's (U.S. EPA) "Surface Impoundment Clean Closure Guidance Manual" as a reference document, as well as outline potential exposure pathways and required background information. The exposure assessment and resulting soil cleanup levels presented in the Closure Plan have been based on the referenced U.S. EPA document, as well as other applicable U.S. EPA guidance manuals used to evaluate Comprehensive Environmental Recovery, Compensation and Liability Act (CERCLA) and RCRA sites. The soil cleanup levels presented in the Closure Plan have also been designed to meet the clean closure criteria presented in IEPA's Closure Plan Instructions. The wording of the Closure Plan also allows for the modification of the soil cleanup levels if additional contaminants or potential exposure pathways are identified.

The IEPA has approved soil cleanup criteria prior to soil sampling at other sites. Sufficient information is already available regarding potential contaminants, regional hydrogeology and water usage and potential exposure pathways to develop soil cleanup criteria for the Croda site prior to performing the Closure Plan soil sampling activities. The exposure assessment approach used in the Closure Plan appears to be more applicable and relevant in the development of cleanup criteria for the soils present at the Croda site than fish bioassy toxicity data (e.g., 0.1 times the 96 hour TLM) typically used by the IEPA. If the IEPA elects not to accept the soil cleanup criteria presented in the Closure Plan, Croda would request that the IEPA provide, in writing, the basis for that decision.

- 6. <u>Sampling Plan and Analytical Methods</u>. The following is the response to individual items mentioned in this section:
 - Three borings have been located in the former UST area. Refer to Figure 3 and Sections 2.2 and 2.3 for the modified proposed boring locations;
 - The five drum storage area borings will be located where the most significant surface deterioration has occurred. The Closure Plan has been revised to reflect this modification;



- Refer to Section 2.5 of the Closure Plan for arguments concerning the use of split spoon sampling for volatile organic compounds (VOCs) in lieu of sampling methods presented in Attachment 7 of the IEPA's Closure Plan Instructions;
- Including both total lead and chromium and E.P. Toxicity for lead and chromium in the sampling plan would incrementally increase the Closure Plan cost estimate by approximately \$17,000 to \$36,000. Based on the relative immobility of lead and chromium in clay soil environments, as well as the low levels of lead and chromium detected in laboratory analyses presented in the Appendices of the Closure Plan, analysis for VOCs and PNAs should be sufficient to assess the area for potential contamination and establish necessary cleanup criteria. It should also be noted that the IEPA has recently approved a Closure Plan for a paint manufacturing facility, currently being performed by Warzyn Engineering Inc. (Warzyn), which only requires soil samples to be analyzed for The waste streams generated by Croda are very similar to VOCs. those generated by the paint manufacturing facility since identical types of pigments, solvents and other raw materials are used in the manufacture of both paint and ink products (refer to Section 2.1 of the Closure Plan for a more detailed discussion).
- · Since it was not known if the stockpiled soil had been contaminated by the contents of the UST at the time of the UST removal, and the soil was immediately containerized once a hazardous waste determination was made, the bare ground area where the stockpiled soil was stored should not be part of the Closure Plan. The analytical results of the stockpiled soil show that no hazardous waste characteristic criteria were exceeded, and that xylene and toluene levels detected are well below typical levels found in non-hazardous gasoline-contaminated soil. The stockpiled soil was covered with plastic prior to being containerized in order to minimize rainwater infiltration. Based on the levels of VOCs detected in the stockpiled soil, it is not likely that the bare ground underneath the stockpiled soil would have been impacted by the presence of the soil. Refer to Section 2.3 of the Closure Plan for a more detailed discussion.
- 7. <u>Certification Statement</u>. A copy of the required certification documents has been included in Appendix F of the Closure Plan.
- 8. <u>Signatory Requirements</u>. A signed copy of the Closure Plan Certification Statement has been included in Appendix F of each of the enclosed Closure Plans.



Since it is expected to take more than 180 days to complete the closure process, an extension is requested as part of the IEPA approval of the Closure Plan. If you have questions regarding the contents of this letter or the Revised Closure Plan, please contact Mr. Mark Rothas of Warzyn at (312) 691-5064. Representatives of Croda would also be willing to meet with the IEPA to discuss the contents of the Closure Plan.

Sincerely,

WARZYN ENGINEERING INC.

Mark Rothas

Mark S. Rothas

Senior Project Engineer

[WP3]

40045L12MSR/dms/JAH



C253-0500



Report Project No. 40045.02 Revised Closure Plan Croda Inks Corporation Niles, Illinois

Prepared for:

Croda Inks Corporation Niles, Illinois

Prepared by:

Warzyn Engineering Inc. Chicago, Illinois

REVISED CLOSURE PLAN FOR CRODA INKS CORPORATION NILES, ILLINOIS FACILITY

Prepared For:

CRODA INKS CORPORATION

Prepared by:

WARZYN ENGINEERING INC. 2100 Corporate Drive Addison, Illinois 60101

October 6, 1989



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- USGS Map
 Private Well Location Map
 Boring Location Map
 Chain-of-Custody Record
 Chain-of-Custody Seal
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- Hazardous Waste Analyses Material Safety Data Sheets for Primary Raw Material and Cleaning Solvents
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SECTION 1 INTRODUCTION

1.1 Regulatory Status

The Croda Inks Corporation (Croda) is submitting this closure plan to the Illinois Environmental Protection Agency (IEPA) with the intention of returning the status of its Niles, Illinois facility to a Resource Conservation and Recovery Act (RCRA) hazardous waste generator. The facility's drum and former underground tank storage areas have been designated as RCRA storage units based on cited deficiencies in the large quantity generator 90-day storage time limit. The deficiencies are outlined in an April 17, 1989 enforcement letter from the IEPA to Croda as a result of a March 28, 1989 IEPA inspection of the facility.

The hazardous waste drum (SO1) and former underground tank (SO2) storage areas will be closed in accordance with the closure performance standards presented in Title 35, Subtitle G, Section 725.211 of the State of Illinois Rules and Regulations. The criteria used to determine "clean closure" are presented in Section 4.2 ("Soil Removal Criteria"). All hazardous waste storage activities will be discontinued in the area during the closure period. Soil potentially impacted by surface spills of hazardous wastes will be remediated to the extent necessary to protect human health and the environment. Future hazardous waste generation will be disposed of within the required generator storage time allowance. Following the completion of closure activities, the drum storage area will either be used for general storage, or continue to be utilized as a 90-day large quantity generator hazardous waste drum storage area.

Since the drum storage area is believed to have always been asphalt paved, a phased soil sampling approach is being recommended. Sampled soil borings down to 10 feet will be initially performed. If necessary, based on the results of the initial soil sampling, a scope of work outlining additional soil sampling and/or the installation of groundwater monitoring wells will be prepared.



1.2 Description of Facility

Croda's Niles, Illinois facility (Refer to Figure 1 for United States Geologic Survey Map) primarily manufactures made-to-order small batch flexible packaging printing inks and adhesives (SIC Codes 2891 and 2893). primarily for the food and soft drink industries. The facility was built around 1964, and is believed to have always been an ink manufacturing operation. Prior to 1978, the facility was not owned and operated by Croda. The primary raw materials used in past and present operations include aliphatic, aromatic and chlorinated solvents, solvent-based resins and ink bases and organic and inorganic pigments. Lead and chromium oxide pigment usage has been phased out of ink formulations manufactured at the facility within the last two years. Operations performed at the site include roller mill dispersion, blending and manual filling into 55-gallon drums and various other container sizes. Based on a review of available data for the area, the overall groundwater gradient in the surficial aquifers appears to be relatively flat, with flow probably to the west towards the North Branch of the Chicago River, which is located approximately one-half mile west of the site.

1.3 Regional Geology and Groundwater Usage

1.3.1 Site Topography

The Croda facility is located in the Northeast Quarter of the Southwest Quarter of the Northwest Quarter of Section 29, Township 41 North, Range 13 East in Cook County, Illinois. Based upon a site visit and a study of the Park Ridge, Illinois 7.5 minute topographic quadrangle map, it appears that the area surrounding the facility is highly industrialized. The area beyond these industrial facilities is densely populated and primarily occupied by residential buildings and occasional commercial buildings. A United States Geologic Survey (USGS) map showing the Croda facility and surrounding vicinity is presented in Figure 1.



The surficial topography around the site exhibits low relief with a gentle slope to the west, in the direction of the North Branch of the Chicago River. The nearest body of water is a small, unnamed pond approximately 1,100 feet south of the site. The North Branch Chicago River, located approximately one-half mile to the west, is the nearest major body of water in the vicinity of the Croda facility. The North Branch flows southward through the Chicago metropolitan area and becomes the Chicago Sanitary and Ship Canal, which flows southwestward and discharges into the Des Plaines River north of Joliet, Illinois. Natural drainage in the site vicinity has been altered by roadways and other man-made features. Surface water run-off flows from the site into storm sewers, which are believed to be routed to the North Branch Chicago River.

1.3.2 Groundwater Usage

Warzyn obtained records from the Illinois State Water Survey (ISWS) of the private wells located in Sections 19, 20, 29, 30 and 32 of Township 41 North, Range 13 East, which indicate that there are, or were, six water supply wells located in those sections. There were no well logs available for Sections 21, 28 and 31. The Croda site is located in the Southwest Quarter of Section 29 and each of the above mentioned sections was obtained in order to provide well log information within a one mile radius of the site. A map showing the approximate locations of each of the private wells is presented in Figure 2, while Appendix E contains the ISWS well logs.

In review of the six ISWS drilling logs, it was noted that four appear to have been installed at private residences, or farms; one was a municipal well for the Village of Morton Grove; and one well was on Cook County Forest Preserve District property. It is not presently known how many of the wells are still operational. Four of the wells were drawing water from the dolomitic limestone aquifer at depths of between 86 and 179 feet below ground surface, while the municipal well and one of the farm wells were drawing water from a dolomite and sandstone aquifer from between 568 and 1,462 feet below ground surface.



During a phone interview with Mr. Scott Jochim, Civil Engineer with the Village of Niles Engineering Department, Warzyn was informed that all of the commercial, industrial and residential buildings west of Lehigh Avenue and east of the Des Plaines River under the jurisdiction of the Village of Niles receive water obtained from Lake Michigan. The water is purchased by the Village of Niles from the City of Chicago and is received into their own reservior via underground pipeline. A similar conversation with Ms. Joan Anundson of the Village of Morton Grove Public Works Department disclosed that the Village of Morton Grove also purchases Lake Michigan water from the City of Chicago.

1.3.3 Regional Geology

A review of available geologic literature indicates the site is on lake plain deposits most typically formed on the floor of glacial Lake Chicago, the precursor to the current Lake Michigan (Lineback, 1979; Willman et.al., 1975; Willman, 1971). These lake plain deposits belong to the Carmi Member of the Equality Formation, deposited during the Pleistocene epoch. The soils of the Carmi were deposited during the Wisconsinan glacial stage between approximately 7,000 and 22,000 years before present (BP). The area in the vicinity of the Croda site is generally characterized by areas of low relief, formed as deposits on the floor of the glacial lake and flattened by wave action.

The Carmi Member is predominantly silt or clay interbedded with sorted sediments; it is composed primarily of sheet-like deposits of silt and clay-sized particles with localized deposits of fine sand near prehistoric lake shorelines. The thickness of the Carmi Member ranges typically between 20 and 40 feet. The relatively thin sediments of the Carmi are underlain by the Wadsworth Till of the Wedron Formation, also of Pleistocene age. The Wadsworth Till is a gray till, interbedded with sorted sediments. This till is composed primarily of silt and clay-sized particles separated by beds of



waterlaid sand, gravel and silt. The combined thickness of the unconsolidated deposits of the Carmi and Wadsworth Formations in the vicinity of the site is approximately 100 feet.

Based upon studies of the literature (Willman et.al., 1967; Suter et.al., 1959; Visocky et.al., 1985), the unconsolidated sediments in the region unconformably overlie bedrock of Silurian age. The Niagaran and Alexandrian Formation, the uppermost bedrock units expected, are a carbonate deposit which will vary from dolomite to a dolomitic limestone. The Silurian formations were most typically formed as reef deposits built while Illinois laid under a shallow sea between 400 and 435 million years BP (Levin, 1978). The thickness of the Silurian in the vicinity of the site is approximately 200 to 250 feet. Underlying the Silurian bedrock units is the approximately 200-foot thick Maquoketa Shale Group, deposited during the Ordovician period. The Maquoketa Group is composed of several individual shale formations and a limestone formation deposited approximately 435 to 600 million years BP. The older Ordovician and Cambrian bedrock units beneath the Maquoketa are composed primarily of limestones and sandstones and are typically in excess of 2,000 feet thick.

1.3.4 Regional Hydrogeology

The silts and clays of the Carmi and the till layer of the Wadsworth generally do not provide sufficient yields to be utilized as drinking water sources due to their low permeabilities. The localized interbedded sand, silt and gravel deposits can yield moderate quantities of groundwater due to higher permeabilities created by greater pore space and more extensive pore interconnections which allow for the migration of groundwater (Fetter, 1988; Freeze et.al, 1979). Recharge to the silts and clays of the Carmi and the till and associated localized sand, silt and gravel units of the Wadsworth typically occurs locally from precipitation.



The bedrock unit immediately below the unconsolidated materials in the northern Illinois area is considered a usable aquifer. Groundwater in the Niagaran and Alexandrian aquifers is primarily obtained from joints, fissures and solution cavities. These water-bearing openings are irregularly distributed both vertically and horizontally in the units. Typical groundwater wells placed in the Niagaran and Alexandrian dolomitic limestone bedrock can yield several hundred gallons per minute. Beneath the Maquoketa Shale, a low permeability unit, underlying the Silurian limestones, are the higher yielding Ordovician and Cambrian age sandstone and limestone units. These units are the most frequently used aquifers in the northeastern Illinois region.

1.4 Description of Drum Storage Area (SO1)

The hazardous waste drum storage area is approximately 125 feet long by 20 feet wide and is located immediately adjacent to the eastern outside wall of the building (see Figure 3). The surface of the drum storage area is presently asphalt. A metal overhang, approximately 20 feet high, was added to protect the drum storage area from precipitation. The ground along the eastern boundary of the drum storage area is part of a yard area and is not paved (i.e. bare surface). The drum storage area is also bordered by the caustic room to the north, the building to the east and an asphalt paved parking lot to the south. The maximum volume of hazardous waste stored in 55-gallon drums and other miscellaneous smaller containers was 6100 gallons. Hazardous waste drums are presently being stored indoors (see Section 4.1) and are disposed of off-site within the 90-day accumulation time period.

1.5 Description of Former Underground Storage Tank (SO2)

A 2000-gallon underground storage tank (UST) was removed from the southern corner of the drum storage area in December of 1988. The UST, required for insurance purposes, was originally installed approximately 20 years ago to collect indoor spills. The UST had been utilized for at least the last two years of its service as a hazardous waste accumulation tank. The 2000-gallon UST was filled to capacity at the time it was taken out-of-service.



1.6 Description of Hazardous Waste Generation

Prior to 1986, ink manufacturing equipment cleaning was performed using a caustic bath located in an addition to the main building on the northern end of the drum storage area. Spent caustic solution was disposed of at Chem-Clear, Inc. in Chicago, Illinois. The caustic bath was replaced with a kerosene washer unit in 1986. The unit is located in the mixing room adjacent to the main manufacturing area. The spent kerosene was regenerated and reused by allowing the solids from the ink residue to settle out in 55-gallon drums and decanting the liquid. Small volumes of predominantly toluene, xylene and methyl isobutyl ketone (MIBK) have also been used to clean the roller mills and mixing tubs.

All of the spent equipment cleaning solutions (i.e. caustic and solvent) qualify as KO86 RCRA listed hazardous wastes (Ink Formulation Industry). Ink sludges, generated either from contaminated or off-specification products or settled sludges from container bottoms, are generated in small volumes on an intermittent basis. The ink sludges qualify as characteristic flammable hazardous wastes (DO01). Refer to Appendix A for available RCRA hazardous waste analyses, Appendix B for Material Safety Data Sheets (MSDSs) for Croda's primary raw material and cleaning solvents and Appendix C for representative manifests for off-site disposal (including recent disposal of waste streams cited in IEPA's April 17, 1989 enforcement letter). Wastewater generated from the cleaning of equipment associated with adhesive manufacturing operations does not qualify as a hazardous waste.

1.7 Schedule for Closure

Presented below is the anticipated schedule for closure completion. The schedule allows for the excavation and disposal of potentially contaminated soil that may be found. The execution of the Closure Plan, if soil excavation is necessary, is expected to take a total of 37 weeks from the time approval of the plan is received. Since it is expected to take more than 180 days to complete the closure process, an extension is requested as part of IEPA approval of the Closure Plan.



Act:	<u>Week</u>	<u>Week Number</u>		
2. 3. 4. 5. 6.	Approval of Closure Plan Soil Sampling and Analysis Submittal of Analytical Results to IEPA and IEPA Review Develop Scope of Remediation Permit Soil for Disposal Soil Excavation/Disposal Closure Report/Certification	0 1-8 9-15 16-21 22-33 34-36 34-37		



SECTION 2 SOIL SAMPLING PLAN

2.1 Parameters to be Analyzed

The subsurface soil samples will be analyzed for parameters representative of the waste streams generated by the facility. This includes kerosene and polynuclear aromatic hydrocarbon (PNA) constituents of kerosene, as well as volatile organic compounds (VOCs) which are used as on-site cleaning solvents and/or are present as ingredients in Croda's ink formulations. Since mineral spirits is the primary solvent system used in Croda's solvent-based ink formulations, it will also be included in the parameter list. The parameters to be analyzed for in subsurface soil samples include:

- · рН,
- RCRA VOCs,
- · PNAs, and
- total petroleum hydrocarbons (TPH) as both kerosene and mineral spirits.

TPH as kerosene will be analyzed to verify that the source of detected PNAs are associated with waste kerosene. Other potential sources of PNA presence include leaching from the asphalt surface and the surface runoff of automotive fuels.

Since spent kerosene is the primary waste stream generated by Croda, and VOCs are potentially the most mobile of the contaminants that may be present, analyzing for these parameters should be sufficient to assess the area for the presence of potential contamination and establish necessary cleanup criteria. Since ink sludge residues only comprise approximately 10% of Croda's hazardous waste generation volume (and raw material pigments only comprise approximately 30% of the ink sludge residue volume), and heavy metals are relatively immobile in the clay soil environment at the site, total lead and chromium analysis, as well as Extraction Procedure (E.P.) Toxicity Analysis for lead and chromium, have not been included in the



sampling plan. Within the last two years, Croda has phased out most of its usage of lead and chromium oxide pigments in the ink formulations manufactured at the Niles, Illinois facility. Total lead and chromium and E.P. Toxicity for lead and chromium levels in soil samples collected from both the base of the former UST excavation (refer to Appendix D) and the excavated soil stockpiled from the UST excavation (refer to Appendix E) do not appear to be elevated, nor do they exceed RCRA hazardous waste characteristic criteria. A hazardous waste characterization analysis performed on the ink sludge removed from the former UST (Refer to Appendix A) shows E.P. Toxicity levels for lead and chromium to be well below the respective characteristic criteria for being classified as a hazardous waste.

Including both total lead and chromium and E.P. Toxicity for lead and chromium in the sampling plan would incrementally increase the Closure Plan cost estimate by approximately \$17,000 to \$36,000. The incremental cost estimate increase includes the addition of ten background soil borings (i.e. minimum of 20 additional soil samples) required by IEPA's March 2, 1989 Closure Plan Instructions. The \$17,000 end of the cost estimate range assumes the background samples would only be analyzed for total lead and chromium and E.P. Toxicity for lead and chromium, while the \$36,000 end of the range assumes the background soil samples would be analyzed for all of the sampling parameters outlined in the Closure Plan, which is usually required by the IEPA.

Based on the relative immobility of lead and chromium in clay soil environments, as well as the low levels of lead and chromium detected in the past analysis of the hazardous waste sludge previously stored in the former UST, analysis for VOCs and PNAs should be sufficient to assess the area for potential contamination and establish necessary cleanup criteria. Analysis of soils associated with the UST removal also do not show elevated levels of lead and chromium. The information that may be gained by including total



lead and chromium and E.P. Toxicity for lead and chromium in the sampling plan would not justify the resulting incremental cost increase to perform the Closure Plan.

2.2 Locations of Drum Storage Area Samples (SO1)

Due to the dimensions of the drum storage area (i.e. 100 feet by 20 feet), a regular interval linear sampling grid of five borings (B1-B5) will be located along the midline of the drum storage area. The first boring will be located approximately 15 feet south of the caustic storage tank room, and subsequent borings will be at 20-foot intervals along the midline of the drum storage area. The five drum storage area borings will be located in areas where the most significant surface deterioration has occurred. determination will be made during soil sampling activities in the field. Even though deterioration of the asphalt surface is evident, a visual inspection of the drum storage area did not reveal any cracks or defects which expose the surface underneath it. No visual evidence of surface spills was observed on the asphalt surface. Six additional borings (B10-B14) will be located at identical intervals, approximately one to two feet east of the limit of the drum storage area, to evaluate impacts to soils from runoff of materials from the storage area. A detailed Boring Location Map is provided in Figure 3.

Soil samples will be collected with a standard 2-inch split spoon sampler (ASTM D1586) from each boring. Samples will be obtained from the intervals 6-inches to 2-feet (below the asphalt surface), 3-feet to 4.5-feet, 5.5-feet to 7-feet and 8-feet to 9.5-feet. All of the samples will be screened with an organic vapor analyzer (OVA) or photoionization detector (HNu). If OVA or HNu levels exceed background readings and/or visible evidence of releases is detected at the 8 to 9.5-foot interval, split spoon sampling (i.e. two samples per five feet) will continue to a depth of 5 feet below the absence of OVA or HNu levels in excess of background levels or visible evidence of releases.



2.3 Locations of UST Area Samples (SO2)

Three borings (86-88) will be located within the former UST excavation area, one at each end of the excavation and one in the middle. Boring B9 will be located outside of the fence line south of the drum storage area in order to assess potential migration of vapor and liquid phase materials originating from the former UST towards the sanitary storm sewer system situated in the main parking lot area. Boring B15 will be located approximately one to two feet east of the limit of the drum storage area in order to assess potential contamination migration in that direction.

Soil samples will be collected with a standard 2-inch split spoon sampler (ASTM D1586) from each boring. Sampling for borings B6 to B8, located within the former UST excavation, will begin at the termination of the pea gravel backfill material. Since borings B9 and B15 will be used to assess potential migration of materials originating from the former UST, sampling will begin at the depth established during borings B6 to B8 as the termination of the pea gravel backfill material. Two samples per five foot interval will be collected to a depth of five feet below the absence of OVA or HNu levels in excess of background levels or visible evidence of releases.

The bare ground area adjacent to the drum storage area where the soil from the excavation of the former UST was stockpiled has not been included in the Closure Plan for the following reasons:

- At the time the soil was stockpiled, it was not known if the soil had been contaminated by the contents of the UST. A composite of the stockpiled soil was submitted for laboratory analysis. Refer to Appendix E for the detailed analytical results;
- Based on the analytical results, the stockpiled soil did not exceed any RCRA hazardous waste characteristic criteria. The soil was classified as a K086 listed hazardous waste due to the presence of trace levels of xylene and toluene (i.e. 15 to 491 parts per billion total VOCs). The detected xylene and toluene levels are less than what can be detected in typical gasoline-contaminated soils which do not qualify as hazardous wastes; and



The stockpiled soil was containerized in roll-off boxes immediately following the determination that it could possibly be considered a KO86 hazardous waste. Based on the levels of VOCs detected in the stockpiled soil, as well as the short time frame that the soil remained uncontainerized, it is not likely that the bare ground underneath the stockpiled soil would have been impacted by the presence of the soil.

2.4 Selection of Samples to be Analyzed

Depending on the results of field screening activities with an HNu or OVA, one of the following scenarios will be followed in the selection of samples to be analyzed to verify the absence or attenuation of potential contamination:

- If neither VOC presence nor visible evidence of releases are detected in any of the samples, the samples collected from depths of 6-inches to 2-feet and 3-feet to 4.5-feet (except borings B6 to B9 and B15) will be analyzed for the parameters outlined in Section 2.1. The first two samples below the depth of the backfill material will be analyzed from borings B6 to B9 and B15.
- If elevated OVA or HNu readings and/or visible evidence of releases are uniformly detected at depths below 5 feet (or 5 feet below the depth of the backfill material within the UST excavation), a representative number of samples, which will be used to characterize the entire area, will be analyzed for the parameters outlined in Section 2.1. The samples selected to represent each sampling depth will be taken from the same boring(s). At least one boring will be selected from the drum storage area, one from the UST excavation and one from the surface runoff area. Levels of compounds detected in the analyzed samples will be assumed to be representative of levels present throughout the entire corresponding storage unit or surface runoff area.
- If VOCs and/or visible evidence of releases are detected in isolated samples, samples where HNu or OVA levels exceed background readings or visible evidence of releases are detected will be analyzed for the parameters outlined in Section 2.1. Two sample intervals (i.e. five feet) below the depth where HNu or OVA levels exceed background readings or visible evidence of releases is detected will also be analyzed to verify that attenuation of subsurface contamination has occurred. In addition to samples with HNu or OVA levels exceeding background readings or visible evidence of releases, the samples outlined above which would be analyzed if neither VOC presence nor visible evidence of releases are detected would also be analyzed. These samples would be analyzed to confirm the isolated occurrence of any detected compounds.



If extensive subsurface impacts are identified, a further scope of work will be developed based upon the data collected. A further scope of work may include additional soil borings and/or the installation of groundwater monitoring wells. The location and depths of additional subsurface soil borings or groundwater monitoring wells will be based on the initial sampling results.

2.5 Sampling Methods

Subsurface soil samples will be collected using a truck-mounted drill rig equipped to drive a standard 2-inch split spoon sampler. The boring hole cuttings and split spoon samples will be screened for VOCs using an OVA or HNu. Samples will be collected at depths outlined in Section 2.2. The samples will be transferred from the split spoon sampler to the sample jar using a stainless steel spoon or spatula.

To minimize volatilization, VOC samples will be collected directly from the split spoon sampler and placed into a 4-ounce glass wide mouth soil jar. The VOC jar will be filled as full as possible. One 8-ounce glass wide mouth soil jar will be filled to 3/4 capacity for PNA and TPH (as both kerosene and mineral spirits) analyses.

Soil samples for VOC analysis will be collected using a split spoon sampler versus soil sampling procedures outlined in Attachment 7 of the IEPA Closure Plan Instructions (Attachment 7) for the following reasons:

- The sampling methods outlined in the Closure Plan have been accepted in numerous Quality Assurance Project Plans and associated sampling plans for investigation of Comprehensive Environmental Recovery, Compensation and Liability Act (CERCLA) sites;
- It is not possible to characterize the subsurface hydrogeology or field screen the borings with an HNu or OVA using sampling procedures outlined in Attachment 7. By field screening borings with an HNu or OVA, it is often possible to avoid the additional costs which may be incurred due to the multiple phases of soil sampling often required in the absence of field screening techniques. Two borings per boring location (i.e. side by side



borings) would be required if sampling procedures outlined in Attachment 7 are used, which would increase the Closure Plan costs associated with drilling activities while not providing better quality data;

- Soil samples are not being mixed or composited using sampling methods outlined in the Closure Plan. Filling the VOC jar as much as possible serves to minimize potential volatilization. Placing the sample into a jar also creates a more homogeneous sample for analytical purposes than sampling methods outlined in Attachment 7;
- It is not possible to determine the sample recovery using sampling procedures outlined in Attachment 7. If recovery is poor, sufficient sample volume may not be available to run all of the required analyses; and
- There is no documentation which shows that VOC volatilization would be less using sampling methods outlined in Attachment 7 versus those outlined in the Closure Plan. Because of the sample handling requirements to perform the analytical tests, the potential for VOC volatilization due to sample handling should be equivalent for both sampling methods. The potential for VOC volatilization during shipping should be less using the sampling methods outlined in the Closure Plan due to the tight seal provided by the teflon lid on the soil jar and the filling of the soil jar to minimize the head space.

Sample bottles will be placed into coolers for storage and shipment and chilled to 4 degrees centigrade for preservation purposes. Ice will be sealed in ziplock plastic bags to prevent leakage. A detailed description of the sampling procedures outlined above is presented in Table 1. Any necessary monitoring well construction or additional sampling information will be supplied at the time the need for further sampling is determined.

2.6 Sample Custody

2.6.1 Field Documentation

All samples will be collected under chain-of-custody procedures. Chain-of-Custody protocol used will follow National Enforcement Investigation Center (NEIC) policies and procedures and User's Guide to the Contract Laboratory Program (CLP) Protocol including use of chain-of-custody forms, custody seals, sample tags, container labels, and field notebooks for sample documentation. The documentation in the field notebook will include



sampling time, location, tag numbers, samplers, weather conditions, and any field modifications of sampling strategy. Standard forms including chain-of-custody record forms, sample labels, and chain-of-custody seals will be maintained throughout the sampling activities.

An example copy of the chain-of-custody form to be used for Croda is shown in Figure 4. Form requirements include:

- Use of one form per shipping container (steel foam cooler).
- Carrier service does not need to sign form if custody seal remains intact during shipment.
- Use for all samples submitted for analysis.

An example of the chain-of-custody seal to be used for sample shipping for Croda is shown in Figure 5. Seal requirements include:

- Two (2) chain-of-custody seals per shipping container attached across the cooler lid to provide evidence that the samples have not been subject to tampering.
- · Covering seals with clear tape prior to shipping sample containers.

A copy of the sample label to be used for Croda is shown in Figure 6. Label requirements include:

- Each sample bottle having a sample label affixed to it. Labels will specify sample date, parameters for analysis (if applicable) and preservative used (if applicable).
- Recording sample label numbers on the chain-of-custody form and sample identification record form.
- Use for on samples collected.



The documentation accompanying the samples shipped to the laboratory will be sealed in a plastic bag taped to the inside of the cooler lid. The lid of the sample cooler will be securely taped shut and sealed with a chain-of-custody label prior to shipment. The Sampling Coordinator will be responsible for collecting the samples, completing the sample documentation, and properly packaging the samples for shipment to the laboratory. Once in the laboratory's possession, sample custody will be the responsibility of the laboratory sample custodian.

2.6.2 Laboratory Chain-of-Custody

Laboratories used for analyses are required to have written and approved standard operating procedures detailing internal chain-of-custody. Laboratory chain-of-custody protocol used will follow NEIC policies and procedures for the CLP.

2.6.3 Final Evidence File

All original data generated through the laboratory will be retained by the contractor collecting the samples. Copies of laboratory data and original field data will be retained by the contractor who will maintain and provide a custodian for the final evidence file. Upon completion of the project, the contractor will maintain the evidence file to document completeness.

2.7 Equipment Decontamination

In order to prevent cross-contamination of samples, non-dedicated reusable sampling equipment will be decontaminated between the collection of each sample. Equipment will also be decontaminated prior to use and before removal from the site. The equipment decontamination procedure will be as follows:

- Trisodium phosphate and water wash,
- Potable water rinse,
- · Distilled water rinse, twice.



The outside of sample bottles will be decontaminated, if necessary, by immersing the bottle up to the neck in distilled water. Solvents will not be used in the external washing of sample bottles.

Since the drum storage area is paved and no evidence of surface spillage is observable, the drill rig should not require decontamination before leaving the site. Decontamination of the augers used for drilling will be performed at a cleaning station removed from the drum storage area. The augers will be cleaned using a high pressure hot water or steam cleaning unit. Additional scrubbing may be required to remove encrusted materials. The augers will either be cleaned inside of a containment trough, or a sump area will be constructed using plastic sheeting, containment curbing and a lined catch basin (e.g. half drum sunk into the ground). Decontaminated equipment will be stored on plastic sheeting and/or platforms above the ground surface. Decontamination of the drill augers will occur prior to the start of work and when leaving the site, as well as between each borehole. Rinse water generated will be collected and analyzed for hazardous waste parameters. The rinse water will either be discharged to the sanitary sewer system or disposed of off-site at an approved disposal facility.

2.8 Site Health and Safety Plan

A site specific health and safety plan will be prepared prior to the beginning of closure activities. The plan will address hazard evaluation, site work plan tasks, necessary levels of protection, decontamination procedures, and emergency response information. All personnel involved in the closure activities will have the necessary training required to perform their assigned tasks and be given a copy of the Site Health and Safety Plan. All on-site workers must meet all applicable training, medical surveillance requirements etc. as specified in 29 CFR 1910 for hazardous site operations.



SECTION 3 ANALYTICAL METHODS AND QA/QC

3.1 Analytical Methods

RCRA VOCs will be analyzed according to SW-846 method 8240 by GC/MS. Non-target VOCs, if present, will be identified through a library search. PNAs will be analyzed according to SW-846 method 8310 by high performance liquid chromatography (HPLC) fluorescence detection. TPH (as mineral spirits and kerosene) will be analyzed according to ASTM method D3328 by GC FID. TPH and PNA samples will be prepared according to SW-846 method 3550.

3.2 QA/QC Procedures

The QA objectives of laboratory analyses with respect to accuracy, precision, and sensitivity are to achieve acceptable data based on specified performance criteria. It is anticipated that at least 95% of the analyses will provide results meeting acceptance criteria. The general QC objective for such measurement data is to obtain reproducible and comparable measurements to a specified degree through the documented use of standardized procedures. Specific provisions for laboratory QA/QC are given below. For quality control purposes, one field duplicate per ten drum storage area soil samples will be collected and analyzed for the parameters outlined in Section 2.1. A field blank, matrix spike and matrix spike duplicate will also be prepared and analyzed for the parameters outlined in Section 2.1. Refer to the Quality Assurance Project Plan (QAPP) for a more detailed presentation of QA/QC procedures, analytical detection limits etc.

3.2.1 Calibration Procedures

Samples analyzed for RCRA VOCs and PNAs will follow calibration and continuing calibration procedures outlined in SW-846 methods. Samples analyzed for TPH will follow calibration and continuing calibration procedures according to the laboratories standard operating procedure (SOP) for petroleum hydrocarbons.



3.2.2 Quality Control Checks

Internal quality control checks for VOC and PNA analyses will follow specifications outlined in SW-846 methods. Internal quality control checks for petroleum hydrocarbons will follow specifications outlined in Warzyn's SOP.

3.2.3 Precision, Accuracy and Completeness

Procedures to address precision, accuracy and completeness for VOCs and PNAs are outlined in SW-846 methods. Procedures for precision, accuracy and completeness for TPH are outlined in the laboratories SOP.

3.2.4 Corrective Action

If quality control audits result in the detection of unacceptable conditions or data, corrective action taken may include the following:

- · re-analysis of the sample if holding time allowances permit;
- re-sampling and re-analysis;
- · evaluating and amending sampling and analytical procedures; or
- accepting data, acknowledging the level of uncertainty.

3.2.5 Data Reduction, Validation and Reporting

Data reduction, validation and reporting is the responsibility of Warzyn Engineering Inc. Data reporting from the laboratory will be consistent with the CLP deliverable format. Laboratory results will be checked by Warzyn Engineering Inc. to determine the fraction of analyses that meet specified QC criteria.



SECTION 4 WASTE DISPOSAL PLAN

4.1 Remaining Drums

All of the hazardous waste drums present on-site during the March 28, 1989 IEPA inspection have already been shipped to Avganic Industries, Inc. in Cottage Grove, Wisconsin for off-site disposal (Refer to Appendix C for copy of manifests). The central hazardous waste drum storage area has subsequently been relocated indoors to the mixing room adjacent to the main manufacturing area. It is intended to make this area the central hazardous waste drum storage area on a permanent basis. Hazardous waste storage will not occur in the present drum storage area during the time period required to complete the closure process. Any remaining pallets, or other debris remaining in the drum storage area, at the time of closure will either be reused on-site or disposed of in the plant's general refuse. Any ink residue on the pallets or debris will be scraped off and disposed of along with the DOO1 flammable hazardous waste ink sludges generated by manufacturing operations.

4.2 Soil Cleanup Levels

Health-based cleanup levels were developed for the primary VOCs used in Croda's operations, as well as for carcinogenic PNAs. Based on Warzyn's experience, PNAs would be expected to be present in the spent kerosene waste stream. Since very little toxicity data exists for the other PNAs, the selected cleanup criteria for all of the carcinogenic PNAs is based on benzo(a)pyrene (B(a)P). Because of the relatively low toxicity of the primary VOCs (refer to Table 3) used at the site (xylene, toluene, MIBK), the selected cleanup criteria for total VOCs is based on the calculated level for methylene chloride, an identified potential carcinogen. The use of methylene chloride as the basis for total VOCs provides an extremely conservative approach in the establishment of health-based cleanup criteria. Individual health-based cleanup levels were developed for the following compounds:



- xylene,
- toluene,
- · MIBK,
- · methylene chloride,
- B(a)P.

Of the above mentioned compounds, methylene chloride and B(a)P presently quality as potential carcinogens. Xylene, toluene and MIBK presently qualify as non-carcinogens.

4.2.1 Exposure Pathway Assessment

Although groundwater is a possible source of human exposure to VOCs at the Croda site, it is not a likely source of human exposure. A subsurface hydrogeological investigation of the Croda site has yet to be performed. Based on regional hydrogeological data, it is probable that a saturated clay layer lies below the Croda site to a depth of approximately 60 feet. Based on the regional hydrogeology, as well as the distances from the site and depths of water wells known to exist within a one mile radius of the Croda site, potential contamination originating from the hazardous waste drum storage area would not be expected to impact existing water wells. Because of its low hydraulic conductivity and storage capacity, it is not anticipated that groundwater present in the clay layer could ever be used as a drinking water source. Furthermore, there are currently no water supply wells on-site, and the areas around the Croda facility are serviced by water from Lake Michigan supplied by the City of Chicago. For the reasons stated, groundwater was not considered as a source of human exposure to VOCs originating from the Croda site. Unlike the VOCs, any PNAs present in onsite soils would not be expected to migrate to the water table because of their high affinities for clay soils and low water solubilities. Because of the above-mentioned conditions, soil ingestion is expected to present the prime route of human exposure to chemicals originating from the Croda site.



4.2.2 Soil Cleanup Level Calculations

Similar procedures were used to calculate soil cleanup levels for non-carcinogens and carcinogens in soil. In general, United States Environmental Protection Agency (EPA) risk assessment guidelines were used as a basis to calculate health based soil cleanup levels (Superfund Public Health Evaluation Manual (SPHEM), 1986). The following sections outline the procedures used to calculate the soil cleanup criteria for carcinogens and non-carcinogens.

4.2.2.1 Soil Cleanup Levels for Carcinogenic Chemicals. To determine the risk of cancer from exposure to carcinogenic chemicals in soil, the daily intake of the chemical from soil ingestion is multiplied by the chemical's EPA cancer potency factor. The result is a qualified estimate of an individual's likelihood of developing cancer as a result of exposure to the carcinogenic chemical at given concentrations and intake rates. The cancer risk due to the chemical exposure is calculated using Equation 1.

Equation 1: Cancer Risk

 $R = CPF \times DI$

Where:

R = Cancer risk level

DI = Daily intake of chemical, mg/kg/dayCPF = Cancer potency factor, $(mg/kg/day)^{-1}$

The daily intake (DI) of the chemical is dependent upon the concentration of the chemical in soil, the rate of soil ingestion and the persons body weight. The daily intake of a chemical is calculated using Equation 2.

The cancer potency factor relates the level of chemical exposure to the probability of the occurrence of cancer in humans. The cancer potency factor was developed by the EPA after reviewing pertinent epidemiology studies, long term cancer bioassays and utilizing specific extrapolation procedures to predict cancer rates at low doses of chemical exposure. The cancer potency factor was derived to predict cancer rates based on the assumption that a person is exposed to the chemical for their entire life



(i.e., 70 years). It is unlikely that a person would be exposed to the Croda site for 70 years; therefore, the soil cleanup levels calculated should error on the conservative side.

Equation 2: Daily Intake-Carcinogens and Non-Carcinogens $DI = \frac{SCL (IR)}{(M) (1000^a)}$

Where: DI = Daily intake of chemical, mg/kg/day

SCL = Soil concentration (i.e., soil cleanup level), mg/kg

IR = Soil ingestion rate, 0.1 g/day

M = Average mass of an adult human, 70 kg

a = Conversion factor, kg soil to g soil

This amount of soil intake appears to over-estimate the likely soil exposure at the Croda facility. The area of contamination is not used as an active work area, but rather as a storage area. Employees would likely be in contact with the area for only a brief period of time during the work day. The Croda facility is secured with a fence and is located in an industrial park. It was, therefore, assumed that adults would be the primary population exposed at the site. The weight for a typical adult specified by the EPA is assumed to be 70 kilograms (kg) (SEAM, 1987). An adult soil ingestion rate of 100 milligrams per day (mg/day) was used as the level of soil exposure (Superfund Exposure Assessment Manual (SEAM), 1987 and January 27, 1989 EPA interim final guidance). The soil concentration of the chemical will be used as the health based soil cleanup concentration.

To estimate the soil cleanup level, an acceptable risk of cancer was established and Equations 1 and 2 were combined to solve for the acceptable concentration of the chemical in soil (see Equation 3).



Equation 3: Carcinogenic Soil Cleanup Level $SCL = R X M 1000^a$ CPF IR

Where: SCL = Soil cleanup level, mg/kg

 $R = Risk level (e.g., 10^{-6})$

CPF = EPA carcinogenic potency factor for the compound,

 $(mg/kg/day)^{-1}$

M = Average mass of an adult human, 70 kg

IR = Soil ingestion rate, 0.1 g/day

a = Conversion factor, g soil to kg soil

The proposed soil cleanup levels for B(a)P and methylene chloride, as well as their associated cancer potency factors, are presented in Table 2. Since the soil ingestion rate, as well as the application of the B(a)P and methylene chloride cleanup levels to the sum of all carcinogenic PNAs and VOCs, respectively, are believed to be extremely conservative estimates, a cancer risk factor of 10^{-5} was used to calculate the corresponding carcinogenic cleanup levels.

4.2.2.2 Soil Cleanup Level Calculations for Non-Carcinogenic Chemicals. To estimate if the soil concentration of a non-carcinogen chemical poses a hazard to human health, the daily intake is determined and compared to the EPA reference dose (Rfd) for the chemical. The exposure assumptions that were used to calculate the soil cleanup levels for carcinogens were applied to the non-carcinogens. The reference dose is defined as the daily dose of a chemical which should not result in any signs of deleterious human health effects. There are daily doses determined for subchronic (AIS) and chronic (AIC) exposure periods. To determine the soil cleanup levels for the Croda facility, chronic reference doses were used as a conservative approach.

To determine if a chemical may pose a hazard, hazard indices (HI) were determined for each chemical. A HI is defined as the ratio of the daily intake over the AIC (see Equation 4).



Equation 4: Hazard Indices for Non-carcinogens

 $HI = \underline{DI}$ AIC

Where: HI = Hazard Index

DI = Daily chemical intake, mg/kg/day

AIC = Acceptable daily intake due to chronic exposure, mg/kg/day

If the daily intake is equal to the acceptable daily intake (Rfd), the HI is equal to 1. If the HI is equal to or less than 1, the chemical is not anticipated to pose a hazard to human health. To calculate the soil cleanup level, the HI is set equal to 1 (i.e., DI = Rfd). Equations 2 and 4 are combined and rearranged to solve for the soil chemical concentration which will result in an HI of 1 (see Equation 5).

Equation 5: Non-Carcinogenic Soil Cleanup Level

 $SCL = RFD \times \underline{M} \times 1000^{a}$ IR

Where: SCL = Soil cleanup level, mg/kg

RFD = EPA reference dose (AIC), mg/kg/day
M = Average mass of an adult human, 70 kg

IR = Soil ingestion rate, 0.1 g/day

a = Conversion factor, q soil to kg soil

The health-based soil standard for the specified non-carcinogenic compounds, as well as their respective reference doses, are presented in Table 3. These values are presented for reference purposes only since they are not incorporated in the final cleanup criteria.

4.2.3 Application of Soil Cleanup Levels

As mentioned previously, PNAs may be present at the Croda facility. Little pertinent toxicological data exists on PNAs. Of the PNAs, the most complete toxicology data base exists for B(a)P. This is the only PNA for which the EPA has calculated a cancer potency factor. No reference doses have been determined for the non-carcinogenic PNAs.



B(a)P is considered the most potent chemical carcinogen in its class. Because of this, the soil cleanup level that is calculated for B(a)P is generally applied to the other carcinogenic PNAs as a conservative soil cleanup criteria. This assumption will be made for the Croda facility. The sum of the soil concentrations of all carcinogenic PNAs found at the site will be calculated and compared to the B(a)P cleanup level (i.e., 0.6 milligrams per kilogram), which is based on an accepted cancer risk level of 10^{-5} . The following PNAs are considered carcinogenic:

- benzo(a)anthracene
- benzo(a)pyrene
- benzo(b)fluoranthene
- chrysene
- dibenzo(a,h)anthracene

It will be assumed that the reduction of carcinogenic PNAs below the established cleanup criteria of 0.6 milligrams per kilogram (mg/kg) will also reduce the non-carcinogenic PNAs to acceptable health-based levels. The following PNAs quality as non-carcinogenic:

· acenaphthene

· acenaphtylene

anthracene

benzo(g,h,i)perylene

pyrene

benzo(k)fluoranthene

fluoranthene

fluorene

indeno(1,2,3-c,d)pyrene

phenanthrene

Because of the relatively low toxicity (refer to Table 3) of the primary VOCs used at the site (xylene, toluene, MIBK), the selected cleanup criteria for total VOCs is based on the calculated level for methylene chloride. The sum of the soil concentrations of all SW-846 Method 8240 VOCs found at the site will be calculated and compared to the methylene chloride cleanup level (i.e. 900 milligrams per kilogram), which is based on an accepted cancer risk level of 10-5. Comparing total VOCs levels to the health-based standard developed for methylene chloride represents a very conservative approach to the development of cleanup criteria for the primary VOCs (xylene, toluene, MIBK) used at the site.



4.2.4 Exposures to Multiple Chemicals

Since the total concentrations of both the VOCs and carcinogenic PNAs will already be summed up and compared to a conservative health-based standard, the potential additive effects of multiple chemicals within a given group of compounds have already been accounted for in the analysis. The potential does exist, though, for more than one carcinogen to be detected in the analyses (e.g. B(a)P and methylene chloride). Equations 6 and 7 would be utilized, if necessary, to evaluate the additive effects of multiple carcinogenic and non-carcinogenic compounds:

Equation 6: Combined Carcinogenic Effects

 $Risk = (CPF_1 \times DI_1) + (CPF_2 \times DI_2)...+ (CPF_n \times DI_n)$ for n compounds

Where: CPF and DI have been previously defined in Equations 1 and 2, respectively.

Equation 7: Combined Hazard Indices

$$HI_n = \underline{C_1} + \underline{C_2} + \underline{C_n}$$
 for n compounds SCL_1 SCL_2 SCL_n

Where: C = Concentration of chemical in soil, mg/kg

SCL = Corresponding soil cleanup level for chemical, mg/kg

In the case of the combined carcinogenic effects, the sum of the products will be compared against a carcinogenic risk factor of 10^{-5} . If the sum is less than 10^{-5} , the soil concentrations of the chemicals will be assumed to be safe. If the sum exceeds 10^{-5} , the applicable cleanup levels will be considered exceeded. A similar comparison is used for the combined hazard index for non-carcinogenic compounds. If the sum of all the ratios is less than one, the soil concentrations of the chemicals will be assumed to be safe. If the sum of the ratios is greater than one, the applicable cleanup levels will be considered exceeded. Both approaches assume the adverse effects of multiple chemicals are additive, intakes are small and no synergistic effects occur between compounds.



4.2.5 Statement of Qualification

The soil cleanup criteria were developed only for the classes of chemicals discussed in this section. If other chemicals potentially of concern are detected at the Croda site, a similar approach would be used to develop additional cleanup criteria. If the subsurface hydrogeology differs significantly from the regional hydrogeology, the soil cleanup criteria would have to be modified to reflect potential groundwater exposure to the identified chemicals. If materials originating from the drum storage area are found to be impacting the storm sewer system discharging to the North Branch Chicago River, applicable water quality criteria might have to be incorporated into the risk assessment.

4.3 Soil Remediation Plan

Soil within the drum storage area will be excavated to a depth of 2 feet using a backhoe if contamination in excess of the cleanup criteria (i.e. 0.6 mg/kg total carcinogenic PNAs or 900 mg/kg total VOCs) is detected in the 6-inch to 2-foot interval samples throughout the drum storage area. Excavated soil will be loaded directly into dump trucks and hauled away for final disposal. Staging will be done on plastic sheeting in order to catch any contaminated soil which is spilled during the loading process. If detected contamination in excess of the cleanup criteria is believed to be in isolated areas, excavation activities will be limited to the isolated grid interval(s) of contamination. If contamination in excess of the cleanup criteria is detected in the soil samples from areas impacted by surface runoff from the storage area (i.e. boring B8 to B13), the excavation activities will include the bare ground area along the entire eastern boundary of the drum storage area up to a distance of 5 feet away from the edge of the asphalt surface.

In the absence of soil contamination which would require excavation of the drum storage area, any residue adhering to the asphalt surface will be removed by scraping and/or brushing. The asphalt surface will then be steam



cleaned and triple rinsed. All wash and rinse water will be collected, analyzed for RCRA hazardous waste characteristics and disposed of in a proper manner.

If a KO86 listed hazardous waste constituent is present, excavated soil will be disposed of at a secure hazardous waste landfill or incinerated. If the waste is classified as non-hazardous (or Illinois Special Waste), the excavated soil will be disposed of at an approved sanitary landfill. An appropriate disposal site will be selected once the analytical results are reviewed for RCRA hazardous waste classification, and it is determined if constituents affected by the RCRA landfill ban are present. Contaminated soil which qualifies as a KO86 hazardous waste is presently covered by the "soft hammer" provisions of the RCRA landfill ban. In order to verify the effectiveness of the remediation, four discrete soil samples will be collected from the base of the excavated area and analyzed for the contaminants identified during the initial sampling activities.

If the levels of compounds of concern in excess of cleanup criteria extend below the 6-inch to 2-foot interval, an additional scope of work will be developed. The additional scope of work may include excavation of contaminated soil to lower depths, a second phase of soil borings and sampling to define the extent of contamination, the installation of groundwater monitoring wells (depending on the depth to the water table) or alternative methods of remediation (e.g. soil vapor extraction, bioremediation). The development of an additional scope of work also applies to potential contamination in excess of cleanup criteria originating from the former UST (i.e. samples collected from borings B6 and B7).

Even though the clay soil environment typical of the regional geology would be expected to attenuate any potential contamination originating from the drum storage area, it is recognized that off-site migration of VOCs via the water table could result in vapor migration into neighboring storm sewer pipes, utilities, basements etc. If the levels of detected contaminants (or



remaining contaminants following the excavation of two feet of surface soil) are below the applicable soil cleanup criteria, and migration to the depth of the water table has yet to occur, a further scope of work would be developed if the potential for migration to the water table exists (based on the levels of detected contaminants, geologic conditions and depth to the water table). An additional scope of work would be expected to include the installation of groundwater monitoring wells, both within the drum storage area and at selected locations near the perimeter of the site. The wells would be sampled on a periodic basis, for a specified period of time, to evaluate the potential for off-site migration of any remaining contaminants.

A similar scope of work would also apply if remaining contaminant levels are below soil cleanup criteria, but migration of those contaminants has already impacted the water table. In this case, the locations of the monitoring wells would be designed to monitor both the rate and attenuation of potential off-site migration. In either case, an alternative remediation method (e.g. pump and treat impacted groundwater, excavate the source of contamination) would be specified if the potential exists for off-site migration of liquid or vapor phase materials originating from the hazardous waste drum storage area.



SECTION 5 STATUS OF AREA AFTER CLOSURE

Closure of the drum storage and UST areas will be complete after the Closure Plan is executed. The facility would then qualify as a large quantity generator, and will generate and store more than 1000 kilograms per month of hazardous waste for less than 90 days. There is presently no intention of utilizing the drum storage area for hazardous waste storage in the future. Future hazardous waste storage will be moved indoors. If the area is considered clean after analysis of the soil samples, it will be left as is. If contaminated soil is excavated, it will be replaced with clean fill material. The area will be paved with asphalt or concrete prior to reutilizing it for equipment storage.



SECTION 6 CLOSURE COST ESTIMATE

A breakdown of the closure cost estimate by activity is presented below. The cost estimate includes the excavation and off-site landfilling of 360 cubic yards of soil (i.e. 125-feet by 30-feet by 2-foot depth assuming a 30% bulking factor) as a K086 hazardous waste. Off-site soil disposal would only be required if contamination is identified during soil sampling activities. It was assumed that only the first 5 feet of each boring would be analyzed. Analytical costs for running all of the parameters mentioned in Sections 2.1 are included for 20 soil samples from the drum storage area, 10 soil samples from the UST area, three field duplicates, one field blank, one matrix spike, one matrix spike duplicate, four excavation clean-up verification samples and RCRA hazardous waste characterizations for the rinse water and excavated soil. Oversight costs by an independent professional engineer were included for the soil sampling and soil excavation activities.

Closure Cost Estimate

I.	Soil Sampling (assumes two days) -Sampling (includes safety protection) -Analytical	\$ 12,000 \$ 42,000
II.	Soil Removal, Transportation and Disposal -Excavation and Disposal (includes safety protection and backfill), if necessary	\$ 72,000
	-Oversight	\$ 5,000
III.	Closure Report/Certification	\$ 11,000
	TOTAL CLOSURE COSTS	\$142,000



SECTION 7 CERTIFICATION OF CLOSURE

The Closure Plan will be executed by an independent environmental engineering firm in conjunction with Croda, and certified by a responsible corporate officer of Croda and an independent professional engineer registered in the State of Illinois (Refer to Appendix D for certification documents). Certification will be completed within 60 days upon completion of closure. The independent professional engineer will be present during soil sampling and any necessary soil removal activities. Croda will notify the designated representative of the IEPA prior to the performance of any critical activities. Documentation supporting the professional engineer's certification will be furnished upon request until Croda has been released from its financial assurance requirements.

Upon completion of closure, a Closure Documentation Report, along with closure certification will be submitted to the IEPA documenting closure activities. This report will include:

- the volume of waste and soil removed,
- a description of the method of waste handling and transportation,
- manifest numbers for off-site disposal,
- \cdot a description of the sampling and analysis methods used,
- a chronological summary of closure activities and costs,
- photo documentation of closure,
- all analytical results.



SECTION 8 REFERENCES

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U.S. EPA, 1987. <u>Superfund Exposure Assessment Manual</u>, U.S. EPA, Office of Emergency and Remedial Response, Washington, D.C.

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Willman H.B. and others, <u>Handbook of Illinois Stratigraphy</u>, Bulletin 95, Illinois State Geological Survey, 1975.

William H.B., <u>Summary of the Geology of the Chicago Area</u>, Circular 460, Illinois State Geological Survey, 1971.



Table 1

Sample Quantities, Bottles Preservation and Packaging Requirements for Soil Samples Croda Inks Corporation

ANALYSIS	BOTTLES AND JARS	PRESERVATION	HOLDING TIME	VOLUME OF SAMPLE	SHIPPING	PACKAGING
SOIL CLP Protocol						
Low Concentration	n (Organics)					
PNAs and Total Petroleum Hydrocarbons	One 8-oz. wide mouth glass jar. with teflon cap	iced to 4°C	7 days extraction	Fill 3/4 full Priority One	Federal Express Priority One	No. 1 foam liner or vermiculite
Volatiles	One 4-oz. wide mouth glass jar. with teflon cap	lced to 4°C	14 days	Fill completely no head space	Federal Express Priority One	No. 1 foam liner or vermiculite

[WP1] 40045R01MSR/gmg/JAH

Table 2 Soil Cleanup Levels For Carcinogenic Compounds
Based On An Adult Population

<u>Compound</u>	Target Cleanup Level (mg/kg) ¹	Carcinogenic Potency Factor (mg/kg/day) ⁻¹
benzo(a)pyrene ²	0.6	11.5
methylene chloride ³	900	.0075

Notes:

Based on cancer risk factor of 10^{-5} and adult soil ingestion as the only potential human exposure pathway. Target cleanup level applies to sum of all carcinogenic PNA

2.

concentrations.

Target cleanup level applies to sum of all VOC concentrations. 3.

40045R01MSR/gmg/JAH

Table 3
Soil Cleanup Levels For Non-Carcinogenic Compounds
Based On An Adult Population

<u>Compound</u>	Target Cleanup Level (mg/kg)1	Reference Dose (mg/kg/day)
methyl isobutyl ketone	35,000	.05
toluene	210,000	0.3
xylene	1,400,000	2.0

Notes:

 Based on adult soil ingestion as the only potential human exposure pathway.

WP1 40045R01MSR/gmg/JAH



NOTES:

DWN. D.L.L. APP'D MSR

BASE MAP DEVELOPED FROM PARK RIDGE, ILLINOIS 7.5 MINUTE USGS TOPOGRAPHIC QUADRANGLE MAP DATED 1963, PHOTOREVISED 1972 & 1980.

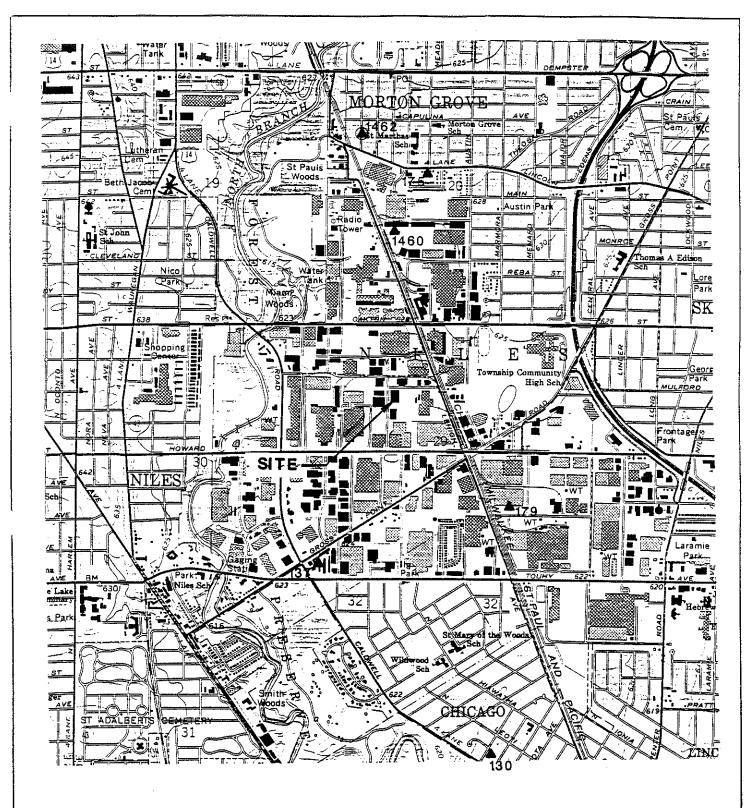
DATE 10/5/89



40045.02-A1

FIGURE 1





NOTES:

DWN. D.L.L

BASE MAP DEVELOPED FROM PARK RIDGE, ILLINOIS 7.5 MINUTE USGS TOPOGRAPHIC QUADRANGLE MAP DATED 1963, PHOTOREVISED 1972 & 1980.

APP'D N/SR DATE 10/5/89

LEGEND

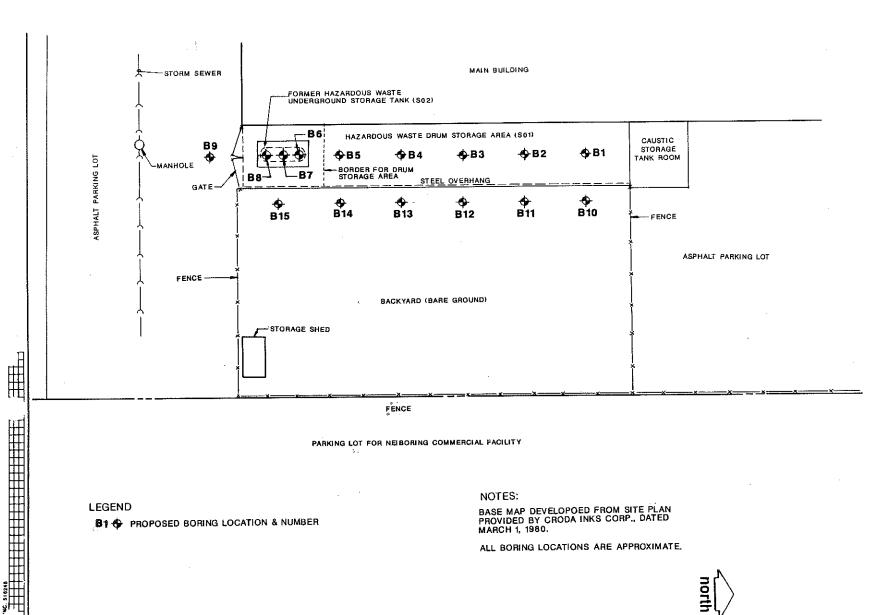
- PRIVATE WELL LOCATION & TOTAL DEPTH
- MUNICIPAL WELL LOCATION & TOTAL DEPTH

FIGURE 2



40045.02-A2

WARZYN ENGWEERING INC PRIVATE WELL LOCATION MAP CRODA INKS CORPORATION NILES, ILLINOIS



LEGEND

181 PROPOSED BORING LOCATION & NUMBER

NOTES:

BASE MAP DEVELOPOED FROM SITE PLAN PROVIDED BY CRODA INKS CORP., DATED MARCH 1, 1980.

ALL BORING LOCATIONS ARE APPROXIMATE.



PROPOSED BORING LOCATION MAR OF 40045.02-B1

WARZYN



CHAIN OF CUSTODY RECORD

Lengir inc One Science Court Iniversity Research Park P.O. Box 5385 Madison, Wisconsin 53705 (608) 273-0440

PROJ. 1	NO.	PROJEC	TNA	ME												7" "	
SAMPLERS	SAMPLERS: (Signature)				NO. OF					//	REMARKS						
LAB NO.	DATE	TIME	СОМР	CRAB	Sì	「ATION	LOCATION	CON- TAINERS									
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						ı				•		-					
Relinquish	ned by: (Signature)	,		Date /	/ Time	Received by: (Signature))	Reli	inqui	shed	by: <i>ιs</i>	Signatu	ire)	Date	/ Time	Received by: (Signature)
Relinquish	ned by: (Signature)	J	\dagger	Date /	/ Time	Received for Laborato	ry by: (Signa	ture)						Date	/ Time	
Remarks								<u> </u>	<u></u>		·					<u> </u>	

FIGURE 4 CHAIN OF CUSTODY FORM

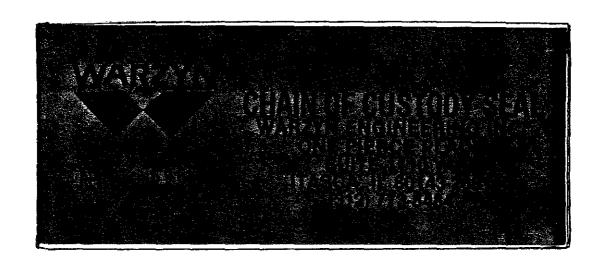


FIGURE 5 CHAIN OF CUSTODY SEAL

Project #		Lab #					
•	•	By					
Project # Sample Descri Date Collected Preservative:		•	lone	Other Unfiltered			

FIGURE 6 SAMPLE LABEL

APPENDIX A HAZARDOUS WASTE ANALYSES

TEL No.1 312 868 5408 Hay 31.89 13:44 P.03



LABORATORY WASTE DISPOSAL DECISION FORM

	R 3287/
LABORATORY	Profile Sheet Number
waste analysis report (has) (has not) been prepared. If not, no ompany policy because	ne is required according to
waste is a virgin product.	
waste has been proviously received.	·
waste is not sampleable.	- '
non hazardous waste.	
have reviewed the profile sheet and analytical report (if required) and find to make sheet.	the Wasto as represented by the
may be received at the facility. may not be received at the facility.	
Rosson:	
CONDITIONS OF ACCEPTANCE	
Chemical Conditions (pH, flash point, etc.):	
Physical Conditions:	
Packaging Conditions (weight, container type, etc.):	
CLHB Code CCR Disposal Outlet Alt. Rec. Code(s) Alt. Disp. Outlet(s)	CWM Chuses
Alt. Rec. Code(s) Alt. Disc. Outlette	a)
Fachalasi Managay Claretures — Managalla (VII 4	16 1 19-6-
recipion wanager signature:	Date
	/

Reviewed by

5/02/89 08:46



TEL No.1 312 868 5408

May 31,89 13:45 P.04



CUSTOMER SERVICE WASTE DISPOSAL DECISION FORM

CONTRACT: CROZZO,	GENERATOR:
PROFILE #: / /328//	DESCRIPTION: Warte Cleaning feli
CAT. CODE: OCR	RECEIVING CODE(S): CET
RATE:	COST: CUSTOMER CTL#:
PRICING COMMEN	ā
PACKAGING REQUIREMENTS	Kilm preked 200 Hb WY limit
DOT NAME: HAZARD CLASS:	Regardence Wort Liquid N.OS
	SIS # KOPE LANDFILLABLE (Y/N): N
LOG DATE:	APPROVED (YN): APPROVAL DATE:
COMMENTS: WEPD 910	CUSTOMER-CODE: CHE/13
	SAVE THIS RECORD? (Y/N):

MAR 141989

CHI 131

WHITE - CUSTOMER SERVICE

YELLOW - FILE COPY

TEL No.1 312 868 5408

May 31.89 13:45 P.05

larbors

WASTE MATERIAL PROFILE SHEET

8/32 R 32811

RETUGES	Profile Number
IAN THE MANAGE SA PARTIES.	PLIN CHICAGO CHEM - DEM FIELD SCHULET
PACUTY NORTH 7777 MERRINAG	CURTOURN CONTACT _TOH SIMPSON
WILES 164. 100648	CUSTOMER PROMS 312. 868-0440
	2012 ALTO 10 10 10 10 10 10 10 10 10 10 10 10 10
THE THE THE THE THE THE THE	1 HNW COUR - MOR 312-967-7578
COMERCICAS COUNCIL NAME FOR WASTE LIAS TX CLEANING TOCKET	The state of the s
MOCESE GENERATING WASTE	* /
S. PHYSICAL CHARACTERISTICS OF WASTE	
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A DOME OF TRANSPORTATION DISPOSED SUPPLINATION	CYAMBERS POP'S PRO-PESS
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D BUX LOUG D BUX tous D SAUM (ACE)	CLEAN HAMBORS HAS WAYED THE BASHLE REQUIREMENT FOR THE POLLOWING REASON
C smek (MRCP)	[] Waste is an unused among product (attach mede) [] Waste mas been previously received by Clean Marsors
D BALE & SHUME D GUESO YOU.	CI WASTE CAN NOT ME SAMPLED
COUNTRYS O ONE THE O QUARTER O YEAR	☐ HWATE IS HON HAZAROOUS
	(1) WALTE WAS GENERATED FROM A SPILL
A WARTE DISCRAL STATUS	HO SIENATURE AVAILABLE UNTIL 1310
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STATE MAZAPOOLE WASTE MANMARRY	
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THE SIMPSON CHIERRO FIELD SERVICE	
312-969-0440	
The age	
	·

GENERATOR'S CERTIFICATION

I hereby serify that all information submitted in this and attached documents is correct to the best of my knowledge. I certify that the waste is not tedfoscrive, gyrophoric, explosive or shock esnettive. I also certify that any samples submitted are representative of the actual waste.

CHI TO ANTI-ORIGINA SIGNATURE NAME (MINT) DATE

B1 312 868 5488 CHEM-CLEAR/CHGD ENT BY:A J12 967 2232 CRODA INKS NILES

/02/89 08:47

008

TEL No.1 312 868 5408

Jun 01.89 14:46 P.02 8X365+1 312 866 5469 P.02



WASTE ANALYSIS REPORT/DECISION SHEET

	8132	LAB SAMPLE TRACKING #
	67.50	
	154	SOX RETAIN #
	777	PROFILE SHEET #
_	K 3580	
DATE IN	. DATE OUT	UB #
analysis: Ace pt	RESULT/NOTE	ANALYST: VHD
analysis: Ace pt Physical description:Si	brupil seador stori	
A short difference and different state of the state of th	1	
APPEARANCE: OCAN		
% SOUD:		
PH: 9		
WATER MIX: SOLUL	<u> </u>	
MINITABLE SCREEN: >/4		
BTU:POOTZ		in the second
46 CHLOMINE: ND		
REACTIVE CYANIDES SCREEN:	<u>an</u>	
REACTIVE BULFIDES SCREEN:		#*************************************
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SUPPLEMENTAL ANALYSIS:		
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APPROVED	•	
DIBAPPROVED		
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000E:	Asz	

APPENDIX B

MATERIAL SAFETY DATA SHEETS FOR PRIMARY RAW MATERIAL AND CLEANING SOLVENTS

02. 21. 89

42-007

MATERIAL SAFETY DATA SHEET

UNOCAL 76 UNOCAL CHEMICALS DIVISION PETROCHEMICALS GROUP

oduct Name: THINNER 23716

Page 1 of 7 Issue Date 10/04/88

MANUFACTURER .

UNOCAL CHEMICALS DIVISION UNION OIL COMPANY OF CALIFORNIA 1345 N. MEACHAM SCHAUMBURG, ILLINOIS 60196

CONTACT FOR FURTHER INFORMATION: MSDS COORDINATOR (312) 619-2644

Transportation Emergencies:
Call CHEMTREG
(800) 424-9300 Cont. U.S.
(202) 483-7616 (Collect)
from Alaska & Hawaii
Health Emergencies:
CALL LOS ANGELES POISON
INFORMATION CENTER (24 hrs.)
(800) 356-3129

PRODUCT IDENTIFICATION

PRODUCT NAME:

THINNER 23716

GENERIC NAME:

SOLVENT BLEND

DOT PROPER SHIPPING NAME:

PAINT RELATED MATERIAL

ID NUMBER:

NA1263

DOT HAZARD CLASSIFICATION:

FLAMMABLE LIQUID

FEB 2 | 1989

HAZARDOUS INGREDIENTS	CAS NUMBER	TLV/PEL	UNITS	AGENCY	TYPE
LACTOL SPIRITS	64742-89-8	NONE			
CYCLOHEXANE 3	110-82-7	300 300 3 75	PPM PPM PPM	osha Acgih Acgih	TWA TWA STEL
HEPTANE 35	142-82-5	500 400 500	PPM PPM PPM	OSHA ACGIH ACGIH	TWA TWA STEL
TOLUENE 27	108-88-3	200 100 150 300 500 200	PPM PPM PPM PPM PPM PPM	OSHA ACGIH ACGIH OSHA OSHA CAL OSHA	TWA TWA STEL CEIL EXCU
METHYL CYCLOHEXANE 35	108-87-2	500 400 500	PPM PPM PPM	OSHA ACGIH ACGIH	TWA TWA STEI
C6-C8 PARAFFINS	NONE	NONE			
C6-C8 CYCLOPARAFFINS	NONE	NONE			

042-002

P03

*UNOCAL CHEM. JALS 02. 21. 89 02:0 PM

Product Name: THINNER 23716 Product Code No: 23716

Page 2 of 7 Isaue Date 10/04/88

SECTION IA - THIS PRODUCT CONTAINS THE FOLLOWING CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SARA 313 AND 40 CFR 372: CAS NUMBER LISTED INGREDIENTS WEIGHT PERCENT RANGE 108-88-3 14.45 - 22.10 TOLUENE 110-82-7 0.95 -CYCLOHEXANE. 2.85



MAIERIAL SAFEIT DAIA SHEE!

EFFECTIVE DATE: AUGUST 17:1985



Union Carbide Corporation urges the customer receiving this Material Safety Data Sheet to study it carefully to become aware of hazards, if any, of the product involved. In the interest of safety you should (1) notify your employees, agents, and contractors of the information on this sheet, (2) furnish a copy to each of your customers for the product, and (3) request your customers to inform their employees and customers as well.

		ae/elele al	IFIGATION					
PRODUCT NAME: CE	LLOSOLVE®	ACETATE .						
CHEMICAL NAME: 2-	Ethoxyethy	/l Acetate	CHEMICAL FAMILY: Esters					
FORMULA: CH	3COOC2H4O	C ₂ H ₅	MOLEC	JLAR WE	EIGHT	: 132.16		
SYNONYMS: Et	ycol Monoeth	yl Ether Ace	tate; 2-	Ethoxy	yethanol Acetate			
· · · ·	ard Class pping Nar		Combustible Ethylene Gly	liquid col Mono	ethyl	Ether Acetate		
CAS # 11-15-9	CAS NAM	ME :	Ethanol, 2-e	thoxy-,	Acetai	te		
		Nev Grand	ZAL DÁTA					
BOILING POINT, 760 mm Hg	156.3	°C (313.3°F)	FREEZING	S POINT	•	-61.7°C (-79.1°F)		
SPECIFIC GRAVITY (H ₂ O = 1)	0.974	8 at 20/20°C	VAPOR P at 20°C	RESSUR	E	2 mm Hg		
VAPOR DENSITY (air = 1)	4.6		SOLUBIL WATER,		•	22.9 at 20°C		
PERCENT VOLATILES BY VOLUME	100		EVAPORATION RA (Butyl Acetate = 1			E 0.21		
APPEARANCE AND ODG	OR Water	-white liqui	d; mild odor	•		 		
		i light	15145					
MATERIAL	TOTAL SAME OF THE PARTY OF THE	%	TLV			HAZARD		
2-Ethoxyethyl Acetate		100	See Section	V		ritant; toxic; mbustible		
	Tree str	e and exe	COSON SIN	AND IN	VA:			
FLASH POINT	126°F, Ta	g closed cup	ASTM D 56	; 134°F,	Tag o	pen cup, ASTM D 1310		
FLAMMABLE LIMITS IN AIR, % by volume	LOWER 1	.7		UPPER	6.7			
EXTINGUISHING MEDIA		sal-type foa				al, alcohol-type, or ers' recommended		
SPECIAL FIRE FIGHTING PROCEDURES	NG Use su	pplied breat	thing air an	d protec	tive o	clothing.		
UNUSUAL FIRE AND EXPLOSION HAZARDS	None							



Name	1			:-":	·	Curani			L. I Obje		
mical		Trichloroeth				Synony			thyl Chloroform Trichloroethane		
,ly	Chlori	nated Hydroc	arbo	on		trade n			orothene ⁽		F
Formula	CH ₃ CC	Cl ₃				M. W.	133	Chl	orothene	B) NU	
				Sumn	nary o	f hazar	ds				
Principal nazards		Breathing of incoordinati	_	_							nd
lammabili category (C	ty OSHA)	Flammable [] IA		B [] IC	C	ombustible	• [] II	□ IIIA	X IIIB		onflammable nd not burnable
hotochem	nically	Olefinic or Cyclo-Olefinic	() vol %	Toluen	e	0 .	vol %	Trichloroet	hylene	0 vol%
eactive component	ts	Aromatic C8 and above (xEB) 0 vol % Ethyl 8		Benzene	0	vol %	Ketones (b		0 vol %		
				Pt	nysica						
Boiling poi	nt	165	°F	7.	4 ·c	Vapor p)	100)	mm Hg
Melting (fre		-36	*F	-3		Vapor o	lensity	-32°C)	4	4.6	(air = 1)
Specific gr at 39.2°F (4	ravity	1.00				Evapor		,	,	7.5	(BuAc = 1)
Solubility in the fact of the	n water					Volatile			100)	vol %
Appearanc		0.07 g/100 g H ₂ O			, g 1120	04			her, sweet		
		Colottess		and e	xplosic	on haza	ard da	ıta		,	
lash point	t] open cup	None	*F	<u> </u>	one •c	Flamma			Upper	1	10.5 vol %
utoignitio emperatur	n	932	°F	50		explosive limits		Lower		8.0 vol %	
irefighting		Emits highl	y tox	cic fum	es of h	ydroge	n chle	oride,	some p	hosgene	e.
Health hazard data							ta				
Occupatio	nal exposi	ure standard: US ahted average)	OS (X				- 10	1,90	0 mg/M3		350 ppm
eight-hou Lethal dos	r time weld age	hted average) Oral	OS (2	air 🗆	skin	ma/ka		ation		* 8	7hr
eight-hou Lethal dos '* = princi	r time weig age pal route	Oral Orl LD 50 rat Percutaneous	OS 12	air 🗆		mg/kg ma/ka	Ihl L Skin	lation C 50 ra	ıt		, 000 ^{7hг} ррп
eight-houselthal dos	r time weld age pal route lon)	Oral Orl LD 50 rat Percutaneous LD 50 rat		air 🗆	skin 0,300	ភាព្វ/kg	Ihi L Skin Skn	lation C 50 ra LD 50	ıt rabbit	>15	7hr ,000 _{рргг} ,800 mg/kg
eight-house tethal dos te principof of absorpti Toxic leve human) Skin and e	r time weld age pal route ion)	Oral Orl LD 50 rat Percutaneous		air 🗆	skin 0,300	ភាព្វ/kg	Ihi L Skin Skn	lation C 50 ra LD 50	ıt rabbit	>15	7hr ,000 _{рргг} ,800 mg/kg
(eight-house Lethal dos f* = princis of absorpti Toxic leve (human) Skin and e irritation Relevant s	r time weld age pal route ion)	Oral Ori LD 50 rat Percutaneous LD 50 rat Breathing 2 concentrate	000 d va	air 1 ppm: d pors fo	skin 0,300 isturba or30 n	mg/kg ance of hin: dea	Ihi L Skin Skn	lation C 50 ra LD 50	ıt rabbit	>15	7hr ,000 ррп ,800 mg/kg
Occupation (eight-house (* = principle) (of absorption (human) (skin and eighten) (ritation (Relevant sof exposur (chronic exposur)	r time weld age pal route ion) il eye symptoms	Oral Orl LD 50 rat Percutaneous LD 50 rat Breathing 2 concentrate Mild.	000 d va	ppm: d	o, 300 isturber 30 n	mg/kg ance of nin: dea	Ihi L Skin Skn equil ith du	lation C 50 ra LD 50 ibrium e to r	rabbit m; espirato	>15	,000 ^{7hr} ррп ,800 mg/kg
eight-house tethal dos tethal dos tethal dos for absorpti Toxic leve human) Skin and e rritation Relevant sof exposur Effects of	r time weld age pal route ion) il eye symptoms	Oral Orl LD 50 rat Percutaneous LD 50 rat Breathing 2 concentrate Mild. Dizziness, Organic inju	000 d va lack ury :	ppm: d pors fo	isturba or 30 n	mg/kg ance of hin: des	Ini L Skin Skn equil ath du	LD 50 rate to return to re	rabbit m: respirato d rapid e	>15	,000 ^{7hr} _{ррп} ,800 mg/kg
(eight-hour Lethal dos (* - princi) of absorpti Toxic leve (human) Skin and e Irritation Relevant s of exposur Effects of chronic ex	r time weld age pal route ion) if eye symptoms e cposure	Oral Orl LD 50 rat Percutaneous LD 50 rat Breathing 2 concentrate Mild. Dizziness, Organic inju	000 d va lack iry i	ppm: d pors fo	isturba or 30 n rdinati ected of for properts are incompared and	mg/kg ance of hin: des lon. due to s erties com dicated in	Skin Skin Skin equil attributed du stabilismon to the following adr	LD 50 ibriume to r tty and cowing senaling	rabbit respirato d rapid e	>15	,000 ^{7hr} ррп ,800 mg/kg
eight-hour Lethal dos The princip of absorpti Toxic leve thuman) Skin and e rritation Relevant s of exposur Effects of chronic ex	r time weld age pal route ion) l eye symptoms e cposure t treatme s to avoi	Oral Orl LD 50 rat Percutaneous LD 50 rat Breathing 2 concentrate Mild. Dizziness, Organic inju NOTE: See D Deviat	000 d va lack iry i	ppm: dopors for comments, do not expense, do n	isturba or 30 n rdinati ected of for properts are incompared and	mg/kg ance of hin: des lon. due to s enties com dicated in ministe oduces	Skin Skin Skin equil attributed du stabilismon to the following adr	LD 50 ibriume to r tty and cowing senaling	rabbit respirato d rapid e	>15	,000 ^{7hr} ррп ,800 mg/kg

					, , , , , , , , , , , , , , , , , , , ,		<i>y</i>					
Name	Methyl	ene Chloride				Synony	ms	Dici	loromet	hane		<u> </u>
Chemical family	Chlori	nated Hydroc	arbo	n		and trade n	ames	Met	hylene D	ichlorid	le	
Formula	CH ₂ Cl	2	2							4		
	Summary of hazards											
Principal hazards		High volatili may result i rapid uncons	n in	ebriatio	on and	ces anesthetic concentrations: exposure didizziness; at very high concentrations,						
Flammabili category (Flammable 🗀 IA	Flammable IA IB IC			ombustible	<u> </u>	□ IIIA	X 1118	□ N a	onflamma nd not bui	ble nable
Photochem reactive	nically	Olefinic or Cyclo-Olefinic 0 vol % Toluen		e .	0	vol %	Trichloroet	hylene	0	vol %		
component	ts	Aromatic C8 and above (xEB)			enzene	0	vol %	Ketones (b hydrocarbo		0	vol %	
				Ph	nysica	data						
Boiling poi at 760 mm		104	۰۶	4	0 ⁺ C	Vapor p at 68°F	(20°C)		340)	mm H	g
Melting (fre	ezing) 0 mm	-142	'F	-9	7 ·c	Vapor o at 60-9	lensity 0°F (15	, -32°C)	2	2. 9	(air ≔	1)
Specific gr at 39.2°F (4	°C)	1. 34	Į.	(H ₂ O	= 1)	Evapor rate	ation		27	7.5	(BuA	= 1)
Solubility i at 68°F (20°		1. 3 g/100 g H ₂ O			g H₂O	Volatile at 70°F			100)	val %	
Appearance	8	Colorless liquid				Odor	Sweet u			npleasant		
			Fire	and e	xplosic	on haza	ard da	ata				
iash poin closed		None			one ·c	Flammable or			Upper	N	one	vol %
Autoignitio temperatur		1139	۰F	61		explosive limits Lower			N	lone	vol %	
Firefighting hazards	g	Emits highl Vapors form									ntent.	
	<u> </u>					ard da			<u></u>	<u> </u>		
Occupation (eight-hou	nal exposi r time weig	ure standard: US ghted average)	OS 5	air 🗆	skin			1740	mg/M³		500**	ppm
Lethal dos	age	Oral Orl LD 50 rat				mg/kg	lhi l	alation C 50 re	ıt	*		ppm
of absorpt	ion)	Percutaneous LD 50 rat				mg/kg	Skir Skn	LD 50	rabbit			mg/kg
Toxic leve (human)		Breathing 5	00 p	pm: Cl	NS and	blood	effect	s.				· · · · · · · · · · · · · · · · · · ·
Skin and e irritation	вуе	Irritates sk	in.	Eye co	ntact is	s painfi	ul but	not i	njurious	unless	confine	d
Relevant :		Headache, tingling of l	dizz imb	iness, s. leth	nausea argy.	, stup	or, n	umbne	ss and			
Effects of chronic ex	posure	Dermatitis rapidly exc	due	to defa	tting a	ction.	No or	rganic	injury e	xpected	l;	
		NOTE: See D Devia		upplemen or comme								
Reports restrict lluent	of syste ed use a for fruit	ntration 1000 emic injury w s solvent for and vegetable ent: If uncon	ere cer e ma	probab tain foc irking i	ly due xd addi inks.	to pres tives	sence (see	of im	purities, 121, 1039)	. FDA I	permits	3
	<u> </u>				Other	data				· · · · · · · · · · · · · · · · · · ·		
Solubility in solvent		0. 2	20	g/100 d	solvent	Solubi	lity pa	ramete	r	9. 9		



MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: APRIL 1, 1985



APR 29 1988

Union Carbide Corporation urges the customer receiving this Material Safety Data Sheet to study it carefully to become aware of hazards, if any, of the product involved. In the interest of rety you should (1) notify your employees, agents, and contractors of the information on this sheet, (2) furnish a copy to each of your customers for the product, and (3) request your tomers to inform their employees and customers as well.

tomers to inform their employees and	customers a	s well.							or the product, and (3) request your
		Alast.		A DENI	F	GATHON			
PRODUCT NAME:	BUTYL	CELI	OSOLV	E®					
CHEMICAL NAME:	2-But	oxyet	hanol		CHEMICAL FAMILY: Glycol Ethers				
FORMULA: C4H9OC2H4OH						MOLEC	ULAR WI	EIGHT	: 118.18
SYNONYMS:	Ethyl	ene C	lycol	Monobu	tyl	Ether			
	d Cla ng N	ssific ame	ation		mbustible mbustible		NOS		
CAS # 111-76-2	C.A	AS N.	AME		Etl	nanol, 2-b	utoxy		
				ji;Ka	ĠΛ	ie i d asiaa.		100	
BOILING POINT, 760 mm Hg		171.	.2°C ((340.2°F)	FREEZIN	G POINT	•	-70.4°C (-94.7° F)
SPECIFIC GRAVITY (H ₂ O = 1)			0.9022 at 20/20°C			VAPOR P at 20°C	RESSUR	E	0.6 mm Hg
VAPOR DENSITY (air = 1)				4.1			ITY IN % by wt	Complete	
VOLUME	S	100				EVAPORATION RATE (Butyl Acetate = 1)			0.08
APPEARANCE AND	ODOR	Colorless liquid; mild odor							
			ille	क्र(सःस	o iiz	Viris.			
MATERI	AL	nine zime (i) ziče više v	Gui an erfor Daelina	%		TLV	a mili in halfe in e câ		HAZARD
2-Butoxyethanol				100		ppm (skir ppm (skir			xic; Eye Irritant; mbustible
	T.	S. E.	IRE /	NA D IDA	e gré	SON IN	ANTO TY	NEW.	
FLASH POINT	150	°F,	Tag C	losed Cu	p,	ASTM D 56	; 157°F,	Tag C	pen Cup, ASTM D 1310
FLAMMABLE LIMITS IN AIR, % by volum		WER	1.1				UPPER	10.6	,
EXTINGUISHING MEDIA		or u		sal-type					al, alcohol-type, curers' recommended
SPECIAL FIRE FIGH PROCEDURES	ITING	Use	self-	containe	d b	reathing	apparatu	s and	protective clothing.
UNUSUAL FIRE AND		None							



MAIERIAL DAFELT VALA OREE!

EFFECTIVE DATE: AUGUST 1, 1985



42-06ZA

Union Carbide Corporation urges the customer receiving this Material Safety Data Sheet to study it carefully to become aware of hazards, if any, of the product involved. In the interest of afety you should (1) notify your employees, agents, and contractors of the information on this sheet, (2) furnish a copy to each of your customers for the product, and (3) request your stomers to inform their employees and customers as well.

			i lk	IDEN	IFJ	CASTION:	\$115 E			
PRODUCT NAME:	CELLOS	SOLVE	® SOL	VENT						
CHEMICAL NAME:	2-Eth	oxyet	hanol	-	CHEMICAL FAMILY: Glycol Ethers					
FORMULA:	C ₂ H ₅ O	C ₂ H ₄ C	Н			MOLEC	ULAR W	EIGH	Γ: 90.12	
SYNONYMS:	Ethyl	ene G	lycol	. Monoeth	ıyl	Ether				
	azarc hippi			ation		bustible Tylene Gly		ethyl	. Ether	
CAS # 110-80-5	CA	S N.	AME		Eti	nanol, 2-e	thoxy-			
			Win	FIRMS:	c/.v	L IDYNIDAN				
BOILING POINT, 760 mm Hg		135.	6°C ((276.1°F)	•	FREEZING	G POINT	•	-90°C (-130°F)	
SPECIFIC GRAVITY (H ₂ O = 1)		0.93	311 at	20/20°C	3	VAPOR P at 20°C	RESSUR	E	4 mm Hg	
VAPOR DENSITY (air = 1)		3.1	3.1			SOLUBILITY IN WATER, % by wt.			Complete at 20°C	
RCENT VOLATILES	•	100				EVAPORATION RATE (Butyl Acetate = 1)			0.41	
APPEARANCE AND O	DOR	Col	orless	s liquid;	; m:	ild and no	nresidua	al odo	or	
					e din					
MATERIA	L			%		TLV	1		HAZARD	
2-Ethoxyethanol				100	Se	e Section	V		rritant; toxic;	
	¥			NAME OF STREET		Carolin Bell	41.50			
FLASH POINT	108	°F, '	Tag c	losed cu	ρ,	ASTM D 56	120°F,	Tag	open cup, ASTM D 1310	
FLAMMABLE LIMITS IN AIR, % by volume		WER	1.7	at 200°F			UPPER	15.6	at 200°F	
EXTINGUISHING MEDIA		univ		-type fo					cal, alcohol-type, or ers' recommended	
SPECIAL FIRE FIGHT PROCEDURES	ING	Use	self-	containe	d b	reathing]	par R		protective clothing.	
UNUSUAL FIRE AND EXPLOSION HAZARD	s	None								

SEP 2 1988



MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: September 1, 1983



Union Carbide Corporation urges the customer receiving this Material Safety Data Sheet to study it carefully to become aware of hazards, if any of the product involved. In the interest of safety you should (1) notity your employees, agents, and contractors of the information on this sheet, (2) furnish a copy to each of your customers for the product, and (3) request your customers to inform their employees and customers as well.

customers to inform their employees and	s, agents, customers	and contr as well.	actors of th	e information on	this sh	1881, (2) furnish a co	py to each of your		for the product, and (3) request your	
			100	And the second second second second	CANADA C	CATION	B. British Die 748	UCIV	CU E	
PRODUCT NAME:	IETHY)	L CEL	LOSOL	VE®			10 M	ULIV		
CHEMICAL NAME:	'-Metl	hoxye	thano	1	CHEMICAL FAMILY: Glycol Ethers					
FORMULA:	H ₃ OC	₂ H ₄ OH	[MOLEC	ULAR WI	ΞĬĠĤΊ	Γ: 76.09	
SYNONYMS:	Ethyl	ene G	lycol	Monomet	:hy:	l Ether				
DEPARTMENT OF Hazard Classification Shipping Name				ation		mbustible nylene Gly		methy	l Ether	
CAS # 109-86-4	CA	S N.				nanol, 2-m				
				PHYS	CA	L-DATA				
BOILING POINT, 760 mm Hg		1249	°C (25	6.1°F)		FREEZIN	G POINT	•	-85.1°C (-121.2°F)	
SPECIFIC GRAVITY (H ₂ O = 1)		0.96	0.9663 at 20/20			VAPOR F at 20°C	RESSUR	Ε	6.17 mm Hg	
VAPOR DENSITY (air = 1)		2.62	2.62			SOLUBILITY IN WATER, % by wt			Complete	
ERCENT VOLATILES		100			EVAPORATION RATE (Butyl Acetate = 1) 0.62			0.62		
APPEARANCE AND OF	OOR	Wate	er-whi	te liqu	id;	mild and	characte	risti	c odor.	
			ÎN ÎN	MESE	ΝĒ	711.5				
MATERIA	L			%		TLV			HAZARD	
2-Methoxyeth	anol			100	Se	e Section	٧	To	oxic; Combustible	
	Ų		IRE	ND EX)FO	SION HA	ZARDID	TAX		
FLASH POINT						STM D 56 M D 1310				
FLAMMABLE LIMITS IN AIR, % by volume	LO	WER	2.5				UPPER	19.8		
EXTINGUISHING MEDIA Use water spray, or universal-type recommended technique.				sal-type	_. fo	ams applie	de, dry e ed by man	chemic nufact	cal, alcohol-type turer's	
SPECIAL FIRE FIGHT PROCEDURES		Use	suppl:	ied brea	thi	ng air an	d protec	tive (clothing.	
'INUSUAL FIRE AND .XPLOSION HAZARDS None										

EMERGENCY PHONE NUMBER • 304/744-3487 • This number is available days, nights, weekends, and holidays.

PAGE 1 OF 4

Badische Corporation

MATERIAL SAFETY DATA SHEET

PRODUCT NAME:	CYCLOHEXANONE	
ADDRESS		PHONE NO.
602 Copper Road,	Freeport, Texas 77541	(409)238-6100
CHEMICAL NAME AND SYNONYMS:	Cyclohexanone; Anone; Cyclohexyl Ke	etone APR 1986
TRADE NAME AND SYNONYMS:	Cyclohexanone	
CHEMICAL FAMILY: Ketone		FORMULA: وَ الْمُواْمِينَ الْمُواْمِينَ الْمُواْمِينَ الْمُوَامِّينَ الْمُواْمِينَ الْمُواْمِينَ الْمُواْمِينَ C ₆ H ₁₀ O
CAS REGISTRY NO. 108-94-1	ISSUE DATE: OCTOBER 1985	REVISION DATE New

HAZARDOUS INGREDIENTS/COMPOSITION INFORMATION

Cyclohexanone - 99.8% minimum

HEALTH HAZARD SUMMARY

NS AND SYMPTOMS OF EXPOSURE:

clarexposure to cyclohexanone can cause irritation to the eyes, nose and throat. Eye contact with the liquid can cause moderately severe irritation and reversible corneal injury. Vapor contact is mildly irritating to the eyes. Liquid cyclohexanone is a moderate skin irritant. Repeated or prolonged contact can defat the skin resulting in irritation or dermatitis. Minor absorption can occur through skin contact. Cyclohexanone vapor is irritating to the nose and throat and excessive exposure can cause narcosis, headache. tremors and other central nervous system effects.

PRIMARY ROUTES OF EXPOSURE:

SKIN CONTACT EYE CONTACT

INHALATION

EXPOSURE LIMITS:

OSHA PEL: 50 ppm (200 mg/m³) TWA

ACGIH TLV (1985-86): 25 ppm (100 mg/m³) TWA

TOXICOLOGICAL PROPERTIES:

Oral - Rat LD50: 1.62 g/kg

Dermal - Rabbit LD50: 1.0 g/kg

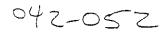
INH - Rat: Exposure for 4 hours @ 20,000 ppm resulted in death of one of six animals.

INH - Guinea Pig: Exposure for 6 hours @ 4,000 ppm caused central nervous system depression and lacrimation.

INH - Monkey: Exposure for 6 hours/day for 50 days @ 190 ppm caused slight liver and kidney damage.

Cyclohexanone can cause irritation of the eyes, nose and throat in humans at 50 ppm. Because it can be detected at 25 ppm in air, its good odor warning properties should prevent injury. The TLV was set at ppm to prevent irritation and possible liver and kidney damage.

his information relates to the particular product described and is the best available data possessed by Badische Corporation on the subject. This ata may not be relevant to any end use product which combines other substances with this product. It is the User's responsibility to determine the accuracy and completeness of this information in the context of its own business purposes; BADISCHE CORPORATION MAKES NO REPRESENTATIONS OR WARRANTIES AS TO THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, AND BADISCHE ORPORATION ASSUMES NO RESPONSIBILITY WHATSOEVER IN CONNECTION WITH THE USE OF SUCH INFORMATION BY USER.





MATERIAL SAFETY DATA SHEET

PAGE 1

EXXON CHEMICAL AMERICAS . P.O. BOX 3272, HOUSTON, TEXAS 77001
A Division of EXXON CHEMICAL COMPANY, A Division of EXXON CORPORATION

06/13/88

ND. 92160000

PRODUCT IDENTIFICATION & EMERGENCY INFORMATION SECTION I

PRODUCT NAME

Methyl Isobutyl Ketone

CHEMICAL NAME 4-Methyl-2-Pentanone

CAS 108-10-1

CHEMICAL FAMILY

Ketone

PRODUCT APPEARANCE

Clear colorless liquid with a characteristic pungent odor.

EMERGENCY TELEPHONE NUMBERS:

EXXON CHEMICAL AMERICAS

713-870-6000

CHEMTREC

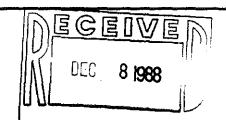
800-424-9300

SECTION II HAZARDOUS INGREDIENT INFORMATION

This product is hazardous as defined in CFR1910.1200.

OSHA HAZARD Flammable PEL: TLV Eye irritant

For additional information see Section III.



HEALTH INFORMATION AND PROTECTION SECTION III

NATURE OF HAZARD

EYE CONTACT:

Irritating, and may injure eye tissue if not removed promptly.

SKIN CONTACT:

Frequent or prolonged contact may irritate and cause dermatitis.

Low order of toxicity.

INHALATION:

High vapor concentrations are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

Low order of toxicity.

INGESTION:

Low order of toxicity.

Small amounts of the liquid aspirated into the respiratory system during ingestion, or from vomiting, may cause bronchiopneumonia or pulmonary edena

FIRST AID

Immediately flush eyes with large amounts of water for at least 15 minutes. Get prompt medical attention.

SKIN CONTACT:

Immediately flush with large amounts of water; use soap if available. Remove contaminated clothing, including shoes, after flushing has begun.

INHALATION:

Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention.

EMERGENCY AND FIRST AID PROCEDURES

Immediately flush eyes for 15 minutes with water. Include under eyelids. Obtain medical EYE CONTACT: attention. Contact lenses should not be worn when working with this chemical.

SKIN CONTACT:

Remove contaminated clothing. Flush contaminated skin with soap or mild detergent and water. If irritation persists, obtain medical attention.

INHALATION:

Remove to fresh air. Restore breathing if necessary and immediately obtain medical attention. Keep the affected person warm and at rest.

INGESTION: Obtain medical attention immediately. If exposed person is conscious, immediately give large quantities of water and induce vomiting by touching back of throat. Do not attempt to make unconscious person vomit.

PHYSICAL DATA

BOILING POINT:	SPECIFIC GRAVITY (H2O=1):
156.7°C	0.95 @ 20/20°C
VAPOR PRESSURE: 2 mm Hg @ 20°C	VAPOR DENSITY (AIR=1):
FREEZING POINT: -45°C	MOLECULAR WT.: 98.16
SOLUBILITY IN WATER: 9 g/100g @ 20°C	APPEARANCE AND ODOR: Water - white to pale yellow oily liquid with an odor of peppermint and acetone.

Odor threshold is 0.24 ppm. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED):	AUTOIGNITION TEMPERATURE:	FLAM	MABLE LI	MITS (% BY VOLUME)
44°C (T.C.C.)	420°C	LEL	1.1	UEL 8.1

EXTINGUISHING MEDIA:

Water mist, CO_2 , dry chemical, foam

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Use water spray to cool containers, to dilute leaking materials and to diffuse vapors. Vapors are heavier than air, and may travel to a source of ignition causing flashback. Firefighters should use self-contained breathing apparatus.

REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID:
Unstable		Excessive heat; Ignition sources.
Stable	x	
		Strong oxidizing agents (such as nitric acid), reducing agents, nitrates,

HAZARDOUS DECOMPOSITION PRODUCTS:

Incomplete thermal oxidation can produce carbon monoxide and carbon dioxide.

'HAZARDOUS POLYME	RIZATION	CONDITIONS TO AVOID:
May occur		Stable under normal storage conditions.
Will not occur	x	

MATERIAL SAFETY DATA SHEET

PAGE 4

O6/13/88 Methyl Isobutyl Ketone

NO. 92160000

042-057

SECTION VIII TY	PICAL PHYSICAL & CHEMICAL PROPERTIES
SP GRAVITY REF. TEMP., 'F O.8 at 68/68	VAPOR PRESSURE 50mmg at 'F
UBILITY IN WATER, WT. % at "F 2 68	VISCOSITY OF LIQUID, eST at "F O.7 at 68
GRAVITY OF VAPOR, at 1 ATM AIR=1	FREEZING MELTING POINT/RANGE, 'F
3.45 PORATION RATE, n-BU ACETATE-1	-119.2
1.7	236.84 to 242.96
	TION IX REACTIVITY DATA
ABILITY7 Stable	HAZARDOUS POLYMERIZATION OCCUR? W111 not occur
NOT Applicable	CONDITIONS TO AVOID HAZARDOUS POLYMERIZATION NOT Applicable
TERIALS AND CONDITIONS TO AVOID INCOMPAT	
agents, and chlorinated compo	
ZAADOUS DECOMPOSITION PRODUCTS None	
SECTIO	ON X TRANSPORT AND STORAGE
. DOT CLASSIFICATION	UN NUMBER
Flammable liquid	U.S. DOT Identification Number: UN 1993
CTROSTATIC ACCUMULATION HAZARD	
Yes use proper grounding pro	COOLING TEMPERATURE F
Ambient	Ambient
ORAGE/TRANSPORT PRESSURE, mmHg Atmospheric	VISCOSITY AT LOADING/UNLOADING TEMPERATURE,cST
	ION XI OTHER INFORMATION
•	
•	
•	
FERENCE NUMBER HDHA-C-00027	DATE PREPARED SUPERCEDES ISSUE DATE JUNE 16 1988 JUNE 9 1988



MATERIAL SAFETY DATA SIJEET

PAGE 1

EXXON CHEMICAL AMERICAS . P.O. BOX 3272, HOUSTON, TEXAS 77001 A Division of EXXON CHEMICAL COMPANY, A Division of EXXON CORPORATION

06/14/88

NO. 92050000

SECTION I PRODUCT IDENTIFICATION & EMERGENCY INFORMATION

PRODUCT NAME

Methyl Ethyl Ketone

CHEMICAL NAME

Methyl ethyl ketone

CAS 78-93-3

CHEMICAL FAMILY

Ketone

PRODUCT APPEARANCE

Clear colorless liquid.

EMERGENCY TELEPHONE NUMBERS:

EXXON CHEMICAL AMERICAS

713-870-6000

CHEMTREC

800-424-9300

CROOM HATE COM

SECTION II HAZARDOUS INGREDIENT INFORMATION

This product is hazardous as defined in CFR1910.1200.

OSHA HAZARD Flammable PEL; TLV Eye irritant

For additional information see Section III.

ÀUĜ 1 1988



NATURE OF HAZARD

EYE CONTACT:

Severely irritating. If not removed promptly, will injure eye tissue, which may result in permanent damage.

SKIN CONTACT:

Frequent or prolonged contact may irritate and cause dermatitis. Low order of toxicity.

INHALATION:

High vapor concentrations are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

Low order of toxicity.

INGESTION:

Low order of toxicity,

Small amounts of the liquid aspirated into the respiratory system during ingestion, or from vomiting, may cause bronchiopneumonia or pulmonary edema.

FIRST AID

EYE CONTACT:

Immediately flush eyes with large amounts of water for at least 15 minutes. Get prompt medical attention.

SKIN CONTACT:

Immediately flush with large amounts of water; use soap if available. Remove contaminated clothing, including shoes, after flushing has begun.

INHALATION:

Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention.

THIS INFORMATION RELATES TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. SUCH INFORMATION IS TO THE BEST OF OUR KNOWLEDGE AND BELIEF, ACCURATE AND RELIABLE AS OF THE DATE COMPILED. HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE AS TO ITS ACCURACY, RELIABILITY OR COMPLETENESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY HIMSELF AS TO THE SUITABILITY AND COMPLETENESS OF SUCH INFORMATION FOR HIS OWN PARTICULAR USE. WE DO NOT ACCEPT LIABILITY FOR ANY LOSS OR DAMAGE THAT MAY OCCUR FROM THE USE OF THIS INFORMATION NOR DO WE OFFER WARRANTY DATENT INFORMATION NOR DO WE OFFER WARRANTY

MATERIAL SAFETY DATA SHEET

UNOCALØ

UNDCAL CHEMICALS DIVISION PETROCHEMICALS GROUP

f oduct Name: ACETONE Product Code No: 15450

Page 1 of 5 Issue Date: 5/23/87

ANUFACTURER:

UNDCAL CHEMICALS DIVISION UNION OIL COMPANY OF CALIFORNIA 1345 N. MEACHAM SCHAUMBURG, ILLINOIS 60196

CONTACT FOR FURTHER INFORMATION: MSDS COORDINATOR (312) 490-2500

Transportation Emergencies: Call CHEMTREC (800) 424-9300 Cont. U.S. (202) 483-7616 (Collect) from Alaska & Hawaii Health Emergencies: CALL LOS ANGELES POISON INFORMATION CENTER (24 hrs.)

(213) 664-2121

6 1988

CRODA INKS CORP.

Miles, Illinois

PRODUCT IDENTIFICATION

RODUCT NAME:

ACETONE

SYNONYMS:

AMSCO SOLV 5450 BETA-KETOPROPANE DIMETHYL KETONE DIMETHYL FORMAL DEHYDE

DIMETHYLKETAL KETONE PROPANE METHYL KETONE PROPANONE

GENERIC NAME:

VOLATILE SOLVENT

<u> 11CAL FAMILY:</u> OXYGENATED HYDROCARBON

DOT PROPER

SHIPPING NAME:

ACETONE

D NUMBER:

UN1090

DOT HAZARD

CLASSIFICATION:

FLAMMABLE LIQUID

CAS NUMBER:

67-64-1

SECTION I - HAZARDOUS INGREDIENTS/EXPOSURE LIMITS CAS NO. TLV UNITS AGENCY TYPE

ACETONE

(90C/O

67-64-1

750.0000 PPM ACGIH THA 1000.0000 PPM ACGIH STEL 1000.0000 PPM OSHA THA 3000.0000 PPM CAL OSHA CEIL

SECTION II - EMERGENCY AND FIRST AID PROCEDURES

***EMERGENCY** Have physician call LOS ANGELES POISON INFORMATION CENTER (24 hrs.) (213) 664-2121

EYE CONTACT:

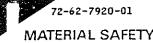
IMMEDIATELY MOVE VICTIM AWAY FROM EXPOSURE TO VAPORS AND INTO FRESH AIR. IF IRRITATION OR REDNESS DEVELOPS, FLUSH EYES WITH CLEAN WATER AND SEEK IMMEDIATE MEDICAL ATTENTION. FOR DIRECT CONTACT, FLUSH THE AFFECTED EYE(S) WITH CLEAN WATER FOR T LEAST 20 MINUTES. SEEK IMMEDIATE MEDICAL ATTENTION.

2-022

TRUBERA

** ATERIAL SAFETY DATA SHEET-

ATLANTA				198	30	
CHEMCENTRALIA	Atlanta P.O. Bo	x 47280 Atlanta, Georgia	3036 2	198 NO 198	Solver	nt Xylene
		30360 (404) 448-7123		:	313	OATE 3/35
I. MATERIAL IDENTIFI	ICATION					D RATING*
MATERIAL/TRADE NAME SO	lvent Xyle	ne j		EMERGENCY TELEPHONE 504/279-9481		HEALTH
synonyms Xylene H	2-02-2			C 800 424-9300		FIRE REACTIVELY
CHEMICAL FAMILY / FORMULA	Aromatic	Hydrocarbon/C8H ₁	0			
cas no. Mixture					0 LEAST 1 SLIGHT 2 MODERATE	3 HIGH 4 EX1 E 7NI 1 14
II. INGREDIENTS						
COMPOSITION	- •		%	TOXICITY DATA	$\mathbf{v} = \mathbf{v} \cdot \mathbf{v}$	
Meta Xylene (CAS Ethyl Benzene (CA			>65 >25	Human, Inhalati TCLo 200 ppm (Irritation)	lon	
Ortho Xylene (CAS Para Xylene (CAS	5 #95-47-6) #106-42-3)		3 2	Rat, Oral		-
				LD50 4.3 g/kg. Rat Inhalation LC50 6700 ppm/	4 hr. (29 mg	5/L)
III. PHYSICAL DATA						
			•			ľ
		/c0 70a) TDD	SOLUBILI	TV:N M A 4 BY WEIGHT	_ T1:	.L1_
BOILING POINT, 780mm/Hg -		(58.7°C) IBP		TY IN H ₂ Q, % BY WEIGHT	- Insolu	
	0.87		EVAPORA	ATION RATE, BUTAL ACETAT	re=1 - 0.5 A	oproximately
BOILING POINT, 780mm/Hg -	0.87 8.5 € 25		EVAPORA	TION RATE, BUTAL ACETAI		oproximately
BOILING POINT, 780mm/Hg — SPECIFIC GRAVITY, H ₂ 0=1 — VAPOR PRESSURE mm/Hg —	0.87 8.5 € 25	Pc	EVAPORA	TION RATE, BUTAL ACETAI	re=1 - 0.5 A	oproximately
BOILING POINT, 750mm/Hg — SPECIFIC GRAVITY, H ₂ 0=1 — VAPOR PRESSURE mm/Hg — VAPOR DENSITY, AIR=1 — VOLATILES, % BY VOLUME —	0.87 8.5 @ 25	Pc	EVAPOR/ Molec	ular Weight	- 106.1	oproximately
BOILING POINT, 750mm/Hg — SPECIFIC GRAVITY, H ₂ 0=1 — VAPOR PRESSURE mm/Hg — VAPOR DENSITY, AIR=1 — VOLATILES, % BY VOLUME —	0.87 8.5 @ 25	PC	EVAPOR/ Molec	ular Weight	- 106.1	oproximately
BOILING POINT, 780mm/Hg — SPECIFIC GRAVITY, H ₂ 0=1 — VAPOR PRESSURE mm/Hg — VAPOR DENSITY, AIR = 1 — VOLATILES, 'A BY VOLUME — APPEARANCE AND COOR C	0.87 8.5 8 25 3.0 100 lear; colo	Crless liquid vit	Molec Molec Maromati	ular Weight	- 106.1	oproximately
BOILING POINT, 750mm/Hg — SPECIFIC GRAVITY, H ₂ 0=1 — VAPOR PRESSURE mm/Hg — VAPOR DENSITY, AIR=1 — VOLATILES, % BY VOLUME —	0.87 8.5 8 25 100 1ear; colo	Crless liquid vit	Molec Molec h aromati	ular Weight c hydrocarbose o	- 106.1	oproximately
BOILING POINT, 760mm/Hg SPECIFIC GRAVITY, H ₂ 0=1 VAPOR PRESSURE mm/Hg VAPOR DENSITY, AIR=1 VOLATILES, % BY VOLUME APPEARANCE AND GDOR: C IV FIRE AND EXPLOSE	0.87 8.5 @ 25 3.0 100 lear colo	Pc	Molec Molec	ular Weight c hydrocarbos o	- 106.1	oproximately
BOILING POINT, 780mm/Hg — SPECIFIC GRAVITY, H ₂ 0=1 — VAPOR PRESSURE mm/Hg — VAPOR DENSITY, AIR=1 — VOLATILES, % BY VOLUME — APPEARANCE AND GOOR C IV FIRE AND EXPLOSE FLASH POINT AND TEST METHOD 810F (27.20C) TCC EXINGUISHING MEDIA F	0.87 8.5 @ 25	rless liquid wit AUTO IGHITION TEMPERATURE 8000F (426.70C) hemical, Halon, e used to cool of	Molec Molec Maromati CO2. Wat	C hydrocarbom o FLAMMABILITY LIMITE IN ALL LOWER- 1.0	- 106.1 - 106.1 NON A * SYVOLUME UPPER effective.	7.0
BOILING POINT, 780mm/Hg SPECIFIC GRAVITY, H20=1 VAPOR PRESSURE mm/Hg VAPOR DENSITY, AIR=1 VOLATILES, % BY VOLUME APPEARANCE AND COOK C FLASH POINT AND TEST METHOD B10F (27.20C) TCC EXINGUISHING MEDIA SPECIAL FIRE FIGHTING COCEDURES	3.0 25 25 25 25 25 25 25 25 25 25 25 25 25	rless liquid wit AUTO IGHITION TEMPERATURE 8000F (426.70C) hemical, Halon, e used to cool of	Molec Molec Maromati Maromati CO2. Wat containers Vapors can fi irefighte:	FLAMMABHUTY LIMITS MAN LOWER 1.0 cer may not be consumer to the consumer to th	- 106.1 - 1	7.0 Water sind and spirate mixtures with and ignition



Ashland Chemical Company

DIVISION OF ASHLAND OIL, INC.

P. O. BOX 2219, COLUMBUS, OHIO 43216 + (614) 889-3333

DATA SHEET

24-HOUR EMERGENCY TELEPHONE (606) 324-1133

KEROSENE

Page:

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

NUMBER:

KEROSENE

8008-20-6

CRODA INKS CORP. ATTN: DEAN ROEING 7777 NORTH MERRIMAC AVENUE NILES, IL 60648-3490

05 88 092 3140118-060 Data Sheet No: Prepared:

0000584-004

Supersedes:

12/09/86 11/04/85

PRODUCT:

INVOICE: REGST

INVOICE DATE: 09/23/88

SECTIONAL PRODUCT IDENTIFICATION -

nl or Generic ID: ALIPHATIC HYDROCARBON

zard Classification: COMBUSTIBLE (173.115)

SECTION FILE COMPONENTS

COMPOSITION OF THIS PRODUCT IS BEING WITHHELD AS A TRADE SECRET.

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS ARE IDENTIFIED IN THIS SECTION SEE DEFINITION PAGE FOR CLARIFICATION

GREDIENT

INE 3 #: 8008-20-6

ス (by MT)

PEL

100

<u>TLY</u>

160.00 ົລ <u>Note</u> (1)

365.00 Deg F 185.00 Deg C) 760.00 mm Hg

SEP 2 9 1988

tes:

por Pressure

ecific Gravity

aporation Rate

13 PEL/TLV NOT ESTABLISHED FOR THIS MATERIAL

IIJSH RECOMMENDS A LIMIT OF 100MG/M3 FOR 10 HR.

for PRODUCT

SECTION IIII—PHYSIGAL IDATA: for PRODUCT

> 5.00 mm Hg 77.00 Deg F 25.00 Deg C) Э (

AIR = 1 4.5 ec fic Vapor Density

> 825 60.00 Deg F 15.55 Deg C)

> > 51.7 Deg C)

45-50% rc at Volatiles (N-BUTYL ACETATE = 1) . п4

SECTION IV-FURE AND EXPLOSION INFORMATION

POINT(TCC

120.0 -125.0 Deg F

48.9

PLOSIVE LIMIT (PRODUCT) LOWER -

JUISHING MEDIA: REGULAR FOAM OR CARBON DIOXIDE OR DRY CHEMICAL

NOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS:, CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS, ETC.

REFIGHTING PROCEDURES: HEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN THE POSITIVE TRESSURE DEMAND MODE WHEN FIGHTING FIRES.

L FIRE & EXPLOSION HAZARDS: VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL ALONG THE GROUND OR BE MOVED BY VENTILATION AND IGNITED BY HEAT, PILOT LIGHTS, OTHER FLAMES AND IGNITION SOURCES AT LOCATIONS DISTANT FROM MATERIAL HANDLING POINT.

TEVER USE MELDING OR CUTTING TORCH ON OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN

ALL FIVE GALLON PAILS AND LARGER METAL CON AND/OR BONDED WHEN MATERIAL IS TRANSFERRED CONTAINERS INCLUDING TANK CARS AND TANK TRUCKS SHOULD BE GROUNDED

CODES: PΔ

RM:

HEALTH- 2

FLAMMABILITY- 2

REACTIVITY- 0

SECTATION OVEHEALTH CHAZARD ADATA

"LE EXPOSURE LEVEL: SEE SECTION II

FE ACUTE OVEREXPOSURE: FOR PRODUCT

ES CAN CAUSE SEVERE IRRITATION, REDNESS, TEARING, BLURRED VISION.
IN PROLONGED OR REPEATED CONTACT CAN CAUSE MODERATE IRRITATION, DEFATTING, DERMATITIS.
EATHING - EXCESSIVE INHALATION OF VAPORS CAN CAUSE NASAL AND RESPIRATORY IRRITATION, CENTRAL NERVOUS SYSTEM EFFECTS INCLUDING DIZZINESS, MEAKNESS, FATIGUE, NAUSEA, HEADACHE AND POSSIBLE UNCONSCIOUSNESS, AND EVEN

OPYRIGHT 1986

CONTINUED ON PAGE: 2

PROD 0047._. B/L 444207---

043

SMATERIAL SAFETY DATA SHEET

REV: 1/25/86

IN MIECH INDUSTRIES, INC.

.655 DES PERES ROAD

>.º. 80× 31000

HUNE: (314) 966-9900	L T14E	EMOTEMEN			
	RD RATINGS	: 0 = LEAST 2 = MODERA 4 = EXTREM	TE 3 == 1		
PICTION I MORE COMMISSION IN MORE COMMISSION OF THE PROPERTY O	PRODUCT DE	SCRIPTION ==	111 111 117 112 113 117 717 11	و عند عاد البرادي بعد البرادية عبد حيث البرادي البرادي	# 175 BM BM 172 AM BM
PRODUCT NAME: NO. 1 FUEL OIL					
! 'NONYMS: KEROSENE					
CHEMICAL FAMILY: ALIPHATIC	HYDROCARBON	•			
LECTION II management amagement	PRODUCT CO	MPOSITION ==) ka na na ua ua an na 22 k	n na sa in in in an in na na in in in in in	= == == == == == ==
INGREDIENT			. VOL. % .	CAS #	TIV _
HYDROCARBON			100	64742-96-7	NE
ECTION III	PHYSICAL P	ROPERTIES ==	: na va w: m: na := ::	: من ## من من ساحة من الدامة البراغة عليه الم	= == 80 Hz == 82 H
BOILING RANGE: 947-54	5 F				
_PECIFIC GRAVITY (WATER=1):	.81			•	
APOR PRESSURE AT 20C (MM OF	HG): @	100 F LESS	THAN 1.		
VAPOR DENSITY (AIR=1):		1.5			
OLUBILITY IN WATER:	N	EGLIGIBLE			
EVAPORATION RATE:	o	. 10			
VOLATILES:	3.	.00			

PPEARANCE AND ODOR: CLEAR, LIGHT YELLOW ODOR: MILD, RESIDUAL

OTHER:

ECTION IV ----FIRE AND EXPLOSION DATA -----

ER FLAMMABILITY LIMITS (% IN AIR): 0.7 - 5

"LASH POINT (AND METHOD):

T.C.C. 198 F

TLAMMABILITY CLASSIFICATION:

CLASS II

42-003

TRIANGLE REFINERIES, INC.

3020 KNIGHT STREET ● SUITE 130 ● SHREVEPORT, LOUISIANA 71105

A SUBSIDIARY OF KERR-MCGEE REFINING CORPORATION

CV-1321

SPECIALTY PRODUCTS DIVISION TELEPHONE (800) 548-3417 (318) 861-0954

MATERIAL SAFETY DATA SHEET

Mineral	spirits	also present in products
,	· /	In products

MSD5 NUMBER

CHEMTREC **EMERGENCY TELEPHONE** 405/270-2526

800/424-9300

I. PRODUCT IDENTIFICATION

PRODUCT CHEMICAL NAME KERMAC 180-210 Naphtha Light Aliphatic Solvent Naphtha CHEMICAL FAMILY Petroleum Hydrocarbon Naphtha 64742-89-8 HEALTH CODE FIRE CODE REACTIVITY CODE Least - 0 Slight - 1 0_ Moderate - 2 High - 3 Extreme - 4

II. HAZARDOUS COMPONENTS

INGREDIENT	%	OSHA LIMIT	TLV
Naphtha	100	Petroleum distillates (naphth TWA-500 ppm	Similar to VM&F na) Naphtha TWA-300 ppm STEL-400 ppm
Benzene	< 0.1	TWA-10 ppm Ceiling-25 ppm	TWA-10 ppm STEL-25 ppm
Toluene	< 0.1	TWA-200 ppm Ceiling-300 ppm	TWA-100 ppm STEL-150 ppm

III. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT	VAPOR PRESSURE	EVAPORATION (ETHYL ETHER = 1)
180-210°F	196 mmHg @ 10	O°F Estimated 7 Times Slower
PERCENT VOLATILE BY VOLUME (%)	MOLECULAR WEIGHT	APPEARANCE
100	99	Water White Liquid
ODOR AND THRESHOLD	MELTING POINT	VAPOR DENSITY (AIR = 1)
Petroleum Naphtha-App	rox. 10 ppm - Not Available	3.3
SPECIFIC GRAVITY (H20 : 1)	VISCOSITY	. SOLUBILITY (G/1006 WATER AT 20 °C)
0.69	<32 SUS @ 100	°F Negligible

APPENDIX C REPRESENTATIVE MANIFESTS FOR OFF-SITE DISPOSAL



STATE OF WISCO Chapter 144, Wis. Stats. Form 4400-66

SIN Rev. 7-87

State of Wis __.sin Department of Natural Resources Bureau of Solid Waste Mgt. Box 8094 Madison, Wisconsin 53708

FOR DNR USE ONLY

t or type. Form designed for use on elite (12-pitch) typewriter. Form Approved. OMB No. 2050-0039. Expires 9-30-88 UNIFORM HAZARDOUS Manifest 1. Generator's US EPA ID No. 2. Page 1 Information in the shaded areas Document No. WASTE MANIFEST is not required by Federal law. ILD 002293124 $0.10 \pm 0.11 \pm 9$ 3. Generator's Name and Mailing Address A. State Manifest Document Number Croda Inks Corp. WI G 7777 N. Merrimac Avenue B. State Generator's ID Niles IL 60648 Generator's Phone (312) 967-7575 5. Transporter 1 Company Name 6. US EPA ID Number C. State Transporter's ID Avganic Industries, Inc. WID 000808824 D. Transporter's Phone 7. Transporter 2 Company Name 8. US EPA ID Number E. State Transporter's ID F. Transporter's Phone 9. Designated Facility Name and Site Address 10. US EPA ID Number G. State Facility's ID Avganic Industries, Inc. 114 S. Main St. 000808824 H. Facility's Phone Cottage Grove, WI 53529 12. Containers Total Unit 1. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number) No. Туре Quantity Wt/Vol Waste No. Hazardous Waste Liquid NOS, RQ 1,1,0,0 G NA 9189 $D_{\parallel}M$ 12 10 K 10 1 8 16 itional Descriptions for Materials Listed Above K. Handling Codes for Wastes Listed Above 5. Special Handling Instructions and Additional Information 10589-R-20841 P.O.# 9408 GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper GENERATOR'S CERTIFICATION: I nereby declare that the contents of this consignment are tuny and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations and according to the requirements of the Wisconsin Department of Natural Resources. If I am a large quantity generator, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. Date inted/Typed Name & Position Title Signature a Month Dav Year EDWIN E. BROWN - GENERAL MANAGER 17. TRANSPORTER 1 Acknowledgement of Receipt of Materials Date inted/Typed Name & Position Title Signature Day 18. TRANSPORTER 2 Acknowledgement of Receipt of Materials Date inted/Typed Name & Position Title Signature Month Day Year 19. Discrepancy Indication Space 'ACILITY OWNER OR OPERATOR: Certification of receipt of hazardous materials covered by this manifest except as 'ed in Item 19. Date inted/Typed Name & Position Title Signature Month Day Year 'PA Form 8700-22 (Rev. 9-86) Previous editions are obsolete. Copy Distribution: 1 - Wis. DNR 4 - Facility

ency 24 Hour Assistance Telephone Number lm€ n V |consin (608) 266-3232

(800) 424-8802

lutame Wisconsin

COPY 1-

5 — Generator6 — Transporter 2 — Generator 3 — Wis, DNR Copies 1 & 3 mail to Wis. DNR at above address.

COPY 5-

Copies 1 & 3 mail to Wis. DNR at above address.

Wisconsin

Outside Wisconsin

(608) 266-3232

(800) 424-8802

State Form LPC 62 8/81 #L532-061

FOR SHIPMENT OF HAZARDOUS, INFECTIOUS AND SPECIAL WASTE.

	1. Generator's U		700-22 (Rev. 9-8 Manifest	2. Page 1		2050-0039, Expires 9-30-9 in the shaded areas is
UNIFORM THE MANIFEST	i i	S EPA ID NO.	Document No.	; of ;	required by by Illinois la	Federal law, but is requi
enerator's Name and Mailing Address	Locat	ion If Different:			nifest Docum	
Croda Ink Cor oration			_	IL 4	<u>11526</u>	FEE PAID
7777 North Merrimac Avenu	•	llinois -6064	8	8. Illinois -	(8:	
4. Generator's Phone (112) 967 5. Transporter 1 Company Name	7-7573 6.	US EPA ID	Number	C Illianie Tr	appropriate ID	201501 Phr
Tr. Fract Inc.		TT 0 0005000		COMPAND II	aliepulies s in	Transporter's Phor
7. Transporter 2 Company Name	8.	The state of the s				ሰ ው T
			***************************************			Transporter's Phor
9. Designated Facility Name and Site Address	as 10). US EPA ID	Number	G. Illinois		Service Control of the Control of th
Chem-Clear				· ID	10 13 11	<u>600005</u>
800 S. Stony Island Av.	,	11,000 -608471		H. Facility's	546-6202	Aller and the second
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Additional Descriptions for Materials Liste	d Above	· · · · · · · · · · · · · · · · · · ·		K. Handling	Codes for W	astes Listed Above
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COMMONWEALTH OF MASSACHUSETTS DEPARTMET OF ENVIRONMENTAL QUALITY EN JEERING DIVISION OF SOLID AND HAZARDOUS WAS I'E

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Approved OMB No. 2050-0039, Expires 9-30-91
A Form 8700-22 (Rev. 9-86) Previous editions are obsolete.

967-7578-OHWATION

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19. Printed Vuled Name

Date Month Day

STRIBUTION: PART - 1 GENERATOR

\$24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* OUTSIDE ILLINOIS: 800 / 424-8802 or 202 / 426-267

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This Agency is authorized to require, pursuant to lithiois Revised Statutes, 1983, Chapter 1119 Section 21, that this information be submitted to the Agency, Failure to provide the information may result in a civil penalty against the owner or operator of not to exceed \$25,000 per day of violation. Failure to grow the Forms Management of the provide the formation may result in a line up to \$50,000 per day of violation and improving the Forms Management of the provide the formation may result in a line up to \$50,000 per day of violation and improving the Forms Management of the provide the formation may result in a line up to \$50,000 per day of violation and improving the Forms Management of the provide the formation may result in a line up to \$50,000 per day of violation and improving the Forms Management of the provide the formation may result in a line up to \$50,000 per day of violation and improving the Forms Management of the provide the formation may result in a line up to \$50,000 per day of violation and improving the formation may result in a line up to \$50,000 per day of violation and improving the formation may result in a line up to \$50,000 per day of violation and improving the formation may result in a line up to \$50,000 per day of violation and improving the formation may result in a line up to \$50,000 per day of violation and improving the formation may result in a line up to \$50,000 per day of violation and improving the formation may result in a line up to \$50,000 per day of violation and improving the formation may result in a line up to \$50,000 per day of violation and improving the formation may result in a line up to \$50,000 per day of violation and improving the formation may result in a line up to \$50,000 per day of violation and improving the formation may result in a line up to \$50,000 per day of violation and improving the formation may result in a line up to \$50,000 per day of violation and improving the formation

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IN ILLINOIS: 217 / 782-3637

TO BE COMPLETED BY WASTE GENERATOR

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGE
DIVISION OF LAND POLLUTION CONTROL
SPECIAL WASTE HAULING MANIFEST
WASTE GENERATOR

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IN ACCORDANCE WITH THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION. I HEREBY AGREE TO AND CERTIFY THE ABOVE WRITTEN INFORMATION DATE: 3-1/-82 WASTE HAULER* QUANTITY OF WASTE RECEIVED. 47 METHOD OF SHIPMENT (Circle One) I HEREBY CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND QUANTITY HAS BEEN ACCEPTED IN PROPER CUNDITION FOR TRANSPORT AND I ACKNOWLEDGE THE DESTINOLITIES. (Authorized Signature) DATE: 31 DATE: 31 CAUTHORIZED CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND INDICATED QUANTITY HAS BEEN ACCEPTED: (Authorized Signature) DATE: 31 CAUTHORIZED CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND INDICATED QUANTITY HAS BEEN ACCEPTED: (Authorized Signature) DATE: 31 CAUTHORIZED CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND INDICATED QUANTITY HAS BEEN ACCEPTED: (Authorized Signature) DATE: 31 CAUTHORIZED CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND INDICATED QUANTITY HAS BEEN ACCEPTED: (Authorized Signature)				
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METHOD OF SHIPMENT (Circle One) DRUMS TANK TRUCY OPEN TRUCK OTHER (Specify) I HEREBY CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND QUANTITY HAS BEEN ACCEPTED IN PROPER CONDITION FOR TRANSPORT AND LACKNOWLEDGE THE DESTINATION (Authorized Signature) DATE 3 / 1/2	WASTE HAULER*	QUANTITY OF WASTE RECEIVED	1100	2 CU. YDS.
I HEREBY CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND QUANTITY HAS BEEN ACCEPTED IN PROPER CONDITION FOR TRANSPORT AND LACKNOWLEDGE THE DESTINDICATED. (1) (Authorized Signature) (2) (Authorized Signature) DISPOSAL, STORAGE, OR TREATMENT FACILITY* I HEREBY CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND INDICATED QUANTITY HAS BEEN ACCEPTED: (Authorized Signature) DATE: 3/1/2		DOUBLE TOWN	N TOHER	-
INDICATED. (1) (Authorized Signature) (2) (Authorized Signature) DISPOSAL, STORAGE, OR TREATMENT FACILITY* 1 HERE BY CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND INDICATED QUANTITY HAS BEEN ACCEPTED: (Authorized Signature) DATE: 31 LL	1			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
(2) (Authorized Signature) (2) (Authorized Signature) DISPOSAL, STORAGE, OR TREATMENT FACILITY* I HEREBY CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND INDICATED QUANTITY HAS BEEN ACCEPTED: (Authorized Signature) DATE: 3 1 11 DATE	I HEREBY CERTIFY THAT THE ABOVA DESCRIBED	SPECIAL WASTE AND QUANTITY HAS BEEN ACCEPTED T	IN PROPER CONDITI	ON FOR TRANSPORT AND I ACKNOWLEDGE THE DESTINATION
(Authorized Signature) DISPOSAL, STORAGE, OR TREATMENT FACILITY* I HERE BY CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND INDICATED QUANTITY HAS BEEN ACCEPTED: (Authorized Signature) DATE: 3 1 11		M		DAIE 3 / 1/1 8
(Authorized Signature) DISPOSAL, STORAGE, OR TREATMENT FACILITY* I HERE BY CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND INDICATED QUANTITY HAS BEEN ACCEPTED: (Authorized Signature) DATE: 3 1 11	(Authorized Signature)	3		54
DISPOSAL, STORAGE, OR TREATMENT FACILITY* 1 HERE BY CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND INDICATED QUANTITY HAS BEEN ACCEPTED: (Authorized Signature) DATE: 3 1 11	(2)			DAIL//
THEREBY CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND INDICATED QUANTITY HAS BEEN ACCEPTED: DATE: 3 / L/ (Authorized Signature)		Y*	***************************************	
(Authorized Signature) DATE: 3/11		 ,	ם לנ חׄי	
(Authorized Signature)		The 2 1	TED.	nu 3 / / / 8
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CONTRACTOR AND COLD A SCRIPT AND THE MEMBER DES			COLOTA MOE MINIOS	DET ANTENNA HERMONE WAS AS
IN ILLINOIS 217 / 782 3637 *24 HOUR EMERGENCY AND SPILE ASSISTANCE NUMBERS* OUTSIDE ILLINOIS 8 DISTRIBUTION PART I GENERATOR PART 2 1EPA PART 3 STH PART 4 HADTER PART 5 IEPA PART 6 GT NERATOR	IN ILLINOIS 217 / 782 3637			

O BE COMPLETED BY WASTE GENERATOR



STATE OF ILLINOIS -

ENVIRONMENTAL PROTECTION AGE DIVISION OF LAND POLLUTION CONTROL SPECIAL WASTE HAULING MANIFEST

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Authorization Number 922205 **WASTE GENERATOR** CRODA INKS CORP. 7777 NORTH MERRIMAC AVE (Company Name) Address 60648 Generator Number NILES IL City State WASIL HAULER(S) BROWNING - FERRIS HELROSE PARK IL S.W.H. Registration Number 25 Hauler Name S.W.H. Registration Number Hauler Name Hauler Address DESTINATION -- DISPOSAL STORAGE OR TREATMENT SITE CHEM - CLEAR (Facility Name) Site Number Address City State Zip TO BE COMPLETED BY WASTE GENERATOR WASTE NAME: WATER WASTES WASTE PHASE: ____ (Liquid, Gaseous, Solid) AND SLUDGE NON - HAZARDOUS THE SPECIAL WASTE BEING TRANSPORTED UNDER THIS MANIFEST IS OF THE DOT HAZARD CLASSIFICATION INDICATED IMMEDIATELY BELOW: SHIPPING DESCRIPTION: HAZARD CLASS: THIS IS TO CERTIFY THAT THE ABOVE NAMED SPECIAL WASTE IS PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED AND IS IN PROPER CONDITION FOR TRANSPORTATION IN ACCORDANCE WITH THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION. I HEREBY AGREE TO AND CERTIFY THE ABOVE WRITTEN INFORMATION (Authorized Signature) CT GALLONS (Circle One) **WASTE HAULER*** QUANTITY OF WASTE RECEIVED: 47 7 1 10 2" CU. YOS TANK TRUCK METHOD OF SHIPMENT (Circle One) DRUMS **OPEN TRUCK** OTHER___ ___ (Specify) I HEREBY CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND QUANTITY HAS BEEN ACCEPTED IN PROPER CONDITION FOR TRANSPORT AND LACKNOWLEDGE THE DESTINATION INDICATED: (Authorized Signature) DATE: ____/ ___/ ____/ (2) (Authorized Signature) DISPOSAL, STORAGE, OR TREATMENT FACILITY* I HEREBY CERTIFY THAT THE ABOVE DESCRIBED SPECIAL WASTE AND INDICATED QUANTITY HAS BEEN ACCEPTED: DATE: ____/ ____/ _____ (Authorized Signature) 1MENTS OR SPECIAL INSTRUCTIONS: IN ILLINOIS. 217 / 782-3637 OUTSIDE ILLINOIS: 800 / 424 *24 HOUR EMERGENCY AND SPILL ASSISTANCE HUMBERS*

PART - 2 IEPA

PART 3 SILE

DISTRIBUTION: PART I GENERATUR

PART 4 HAULER PART 5 JEPA

PART 6 CENERATOR

APPENDIX D . . SOIL ANALYTICAL RESULTS FROM BASE OF UST EXCAVATION

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11:06

TENCO LABORATURIES

BPM INDUSTRIES

1150 Junction Avenue - Schererville, Indiana 46375

1-219-322-2560 • 1-800-428-3311

12/21/88 Vace:

Recd: 12/19/88

21-0718 WO Fr

						•	
Laboratory Smp ID No.:	2987-9	2988-9	2989-9				
DESCRIPTION:> nl otherwise noted; such in parts per Clion - ppn PARAMETERS:	CC # 2 South	CC # 3 Center	CC # 1 North End				Detection Limit
	12/14/88	12/14/88	12/14/88				
etobe	ND	MD	MD			_	1 mg/kg
nzene	ND	ND	MD				1 mg/kg
Butyl Alcohol	ND	ND	ND				1 mg/kg
rbon Disulfice	MD	, MD	ND '			1	1 mg/kg.
rbon Tetrachloride	MD .	ND ND	ND				1 mg/kg
larobenzene	ND	J. ND	ND				1 =c/kg
esals	Nn	WD.	מא				1 mc/kg
esylic Acid	Д И		· ND				1 mg/kg
c) come	·· ND	3 D	ND.				l m/kg
Olchiero Benzene	מא		CDK			·	1 mg/kg
boxy Ethanol	ND_	RD	ND	•			L mg/kg
vl Acetate	ND	1510	OK		•		1 m/kg
orl Benzene	ND	NED.	מא				1 m/kg
orl Ether	ND_	AD	ND	}			1 =/12
butanal	KO	MD	ND				2 mg/kg
henol	ND	ND	ND	ļ			1 11/10
hylene Chloride	ND	" ND	ND I		·	00	1 7/195
MD-Not Detect		Telegraphy (Sept.)		7	1 	7-11-11-1-1	

ND=Not Detected

REPORT TO:

Chem Clear 1600 167th St

Jean Millard

Calumet City IL 60409
EPA MEIROD

TENCO LABORATORIES

BPM INDUSTRIES

1150 Junction Avenue - Schererville, Indiana 46375

1-219-322-2560 • 1-800-428-3311

REPORT TO: Jean Millard Chem Clear 1600 167th St Calumet City IL 60409 RPA MERICOD

12/21/88 Date:

12/19/88 Recd:

21-0718 WO #:

Laboratory Smp 10 No.:	2987-9	2988-9	2989-9					
DESCRIPTION: —> Less otherwise noted; esults in parts per illion - ppm	CC # 2 South fowards. parking lot	CC # 3 Center	CC # 1 North End		,		DETECTION	
PARAMETERS	12/14/88	12/14/88	12/14/88			• •		<u></u>
Methyl Ethyl Ketone	ND	· ND	ND			·	1 mg/kg	
Methyl Isobutly Ketone	(IM)	1.79	3.34			•	1 mg/kg	
Mitrobenzene	ND -	ND	OM ·				1 mg/kg	# - ^
2-Bitro Propane	מא	ND	ND .			<u> </u>	1 mg/kg.	
Pyridine	ND	ND	מא				1 mg/kg	_
Tetrachlorocthylene		ND	ND .		·		1 = /kg	- 4V
Toluene	289.	3.52	35.1		4		2 mg/kg	۔ '
Trichloroethylene	ND	ND	ND .			•	1 mg/kgc	_
1.1-Trichlorocthane	UN	ND	. ND				1 mg/kg	
1.1.2-Trichloroethane)RCD	ND	ND ·	•			1 mg/kg_	
1.1.1-Trichloro- 1.2.2-Trichloro-thane	ND	ND	ND				1 mg/kg	-
Trichlorofluoromethane:	ND :	ND	CM				1 mg/kg	
Xylenc	2.08	מא	6.68				1 mg/kg	•
								-
								-
						$\Omega \Delta$	·	
ND=Not Detected				7'-				: -

certified bgs

TACA

TENCO LABORATORIES

BPM INDUSTRIES

1150 Junction Avenue - Schererville, Indiana 46375 1-219-322-2560 ● 1-800-428-3311

REPORT TO:

Tom Simpson Chem Clear 1600 167th St. Calumet City, IL 60409



Date: 12/30/88

Recd: 12/19/88

₩ #: 21-0718

Laboratory Smp 1D No.:	2987-9	2988-9	2989-9				
DESCRIPTION:> [Uncess otherwise noted; results in parts per	CC #2 South	CC #3 Center	CC #1 North			v	
million - ppm] PARAMETERS:	12/14/88	12/14/88	12/13/88		78		
Total Halogen	91 .	5	118				
Lead	13.40	5.85	25.40	17/			
Chromium	8.60	7.78	7.88	10			
EP TOXICTTY Lead	⟨0,009	<0:009	<0.009				
Chromium	0.011	0.010	0.011				
						·	
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TENCO LABORATORIES DIVN. OF THX, INC.

1150 Junction Avenue - Schererville, Indiana 46375 1-219-322-2560 • 1-800-428-3311

REPORT TO:

Cathy Ortiz Chem Clear 11800 S. Stony Island Avenue Chicago, IL 60617



1/17/89 Date:

1/04/89 Recd:

21-0847 ₩0 #:

_ K	co	d.	Ω.	Ι,	1k

	Kroda_Li	<u>ık</u>					
Laboratory Smp 10 No.:		de g	3374-9				
DESCRIPTION: —> nless otherwise noted; su in parts per clion - ppm] PARAMETERS:	#	1 Down - 84": 2 Down - 42" 3 Down - 60"	Composite Soil	#4 Down - #5 Down - #6 Down -	48"		maximum concentration (metals only)
	AS RECEIVED	TOTAL	REACTIVE		TOTAL	EP TOXICITY	
FLASHPOINT-(140°F)	>200°F		·	SILVER		<0.002	5.0 ppm
Percent Acidity		· .		ARSENIC	 	<0.01	5.0 ppm
Percent Alkalinity				BARIUM		0.534	100.0 ppm
pH (2-12.5**)	6.3			CADMIUM		0.038	1.0 ppm
Percent Total Solids	81.11			CHROMIUM**	*	<0.004	5.0 ppm
SULFIDE	⟨0.4		<0.4	MERCURY		0.00025	.2 ppm
CYANIDE	1.531	N. 12	<1.5	LEAD		0.189	5.0 ppm
PI OL	0.239	/ Mg		SELENIUM		⟨0.01	1.0 ppm
·							
			·		· · · · · · · · · · · · · · · · · · ·		
			·		•	<u> </u>	
				*** Total			
** Allowa' 9 Range						0	

TENCO LABORATORIES DIVN. OF THX, INC.

1150 Junction Avenue - Schererville, Indiana 46375 1-219-322-2560 ● 1-800-428-3311

REPORT TO:

Gary Freeman Chem Clear 1600 167th St. Calumet City, IL 60409



Date:

10/13/87

Recd:

9/24/87

₩O #:

19-1472

Laboratory Smp 10 No.:		6073-7	Chola	- Soils	Sample		
CRIPTION: —> less otherwise noted; ults in parts per lion - ppm] PARAMETERS:		Croda Ink					maximum concentrations (metals only)
	AS RECEIVED	TOTAL	REACTIVE		TOTAL	EP TOXICITY	
LASHPOINT-(140°F)	>200°F			SILVER	24.4	<0.005	5.0 ppm
ercent Acidity		· ·		ARSENIC .	⟨0.100	<0.010	5.0 ppm .
ercent Alkalinity	0.56			BARIUM	9991.0	0.311	100.0 ppm
1 (2-12.5**)	7.5	• • • •		CADMIUM	156.0	0.300	1.0 ppm
ercent Total Solids	65.16			CHROMIUM**	* 11.6	0.021	5.0 ppm
UITIDE	<0.05	·	<0.05	MERCURY	<0.010	0.0018	,2 ppm
ANIDE	19.606		<0.20	LEAD	8148.0	0.254	5.0 ppm
TENOL	1.68	est tra		SELENIUM	<0.100	<0.010	1.0 ppm
OC .	2500						
TOX	<0.05						
OLOR: BACK COLUMN	Green				-;		
PECIFIC GRAVITY		非 图45			1		
REE LIQUID	None Present	374			w.		
GAPATABELITY	No Reaction						
3	कृष्णी दर्जा दे						<u></u>
				*** Total	// ^	1710	
Allomabisnge						VIIVE	·

APPENDIX E RCRA CHARACTERIZATION OF STOCKPILED SOIL FROM UST EXCAVATION

Quality \nalytical Laboratories, Inc.

"Precision, Accuracy and Service"

Warzyn Engineers, Inc. ATTN: James W. Wink 1 Pierce Place Itasca, IL 60143

Job #:1-631 Date: 6/12/1989

Sampling Date: unknown Analyses Date: 6/6-12/1989

Technique/Method: The samples were analyzed as per USEPA SW-846

methods 8010 and 8020

Identification: Two samples identified as:

Project Name: Croda Inks Corp

Project #: 40045.03 Location: Niles, IL

All results expressed in ug/kg (ppb)

Results: Soil Pile #1

Parameter	method detection	Limit Analysis
Chloromethane	5	BOL
Bromomethane	5	BDL
Vinyl Chloride	5	BDL.
Chloroethane	5	BDL
Methylene Chloride	1	8DL
Trichlorofluorometha	ne 1	BDL
Acetone	75	BDL
Carbon Disulfide	1	BDL
Dibromomethane	1	BDL
Dichlorofluoromethan		BDL
Ethanol	25	BDL_
Iodomethane	1	BDL
1,1-Dichloroethane	1	BDL.
1,1-Dichloroethene	1	8DL
trans-1,2-Dichloroet		BDL
Trichloromethane (C	•	BDL
1,2-Dichloroethane	1	BDL
1,1,1-Trichloroethar		BDL
1,2,3-Trichloropropa		8DL
Vinyl Acetate	25	BDL
Tetrachloromethane(C		BDL.
Bromodichloromethane	——————————————————————————————————————	BDL
1,2-Dichloropropane	. 1	BOL
Tribromomethane (Bro		BOL
4-Methyl-2-pentanone		BDL.
trans-1,3-Dichloropr		BOL.
2-Chlorovinyl Ether	1	BDL
Trichloroethene	1	BDL
Benzene	1	BOL
Dibromochloromethane		BDL
1,1,2-Trichloroehtar		BDL.
cis-1,3-Dichloroprop	ene 1	BDL

Quality Analytical Lauvialules,

recision. Accuracy and Service"

	ı	1-631 Page 2
Parameter	method detection Limit	Analysis
trans-1,3-Dichloropr 1,1,2,2-Tetrachloroe Tetrachloroethene Methylbenzene (Tolue Ethyl Benzene Xylenes (Total) 2-Hexanone Acrolien Acrylonitrile 1,4-Dichloro-2-butar Ethyl Methacrylate Chlorobenzene 2-Butanone (Methyl E Styrene	thane 1 1 2 2 2 2 3 10 1 1 1 1 1 1 1 1 1 1	BOL BOL 351 451 804 400 800 800 800 800 800 800 800 800
Note: Bromofiuorober	zene present	
Results: Soil Pile	#2	•
Parameter	method detection Limit	Analysis
Chloromethane Bromomethane Vinyl Chloride Chloroethane Methylene Chloride Trichlorofluorometha Acetone Carbon Disulfide Dibromomethane Dichlorofluoromethane Ethanol Iodomethane 1,1-Dichloroethane 1,1-Dichloroethene trans-1,2-Dichloroet Trichloromethane (0) 1,2-Dichloroethane	75 1 1 1 25 1 1 1 1	80L 80L 80L 80L 80L 80L 80L 80L 80L 80L

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25

1,1,1-Trichloroethane

Bromodichloromethane 1,2-Dichloropropane

2-Chlorovinyl Ether

Trichloroethene

Benzene

Vinyl Acetate

1,2,3-Trichloropropane

Tetrachloromethane(Carbon Tet)

Tribromomethane (Bromoform)

4-Methyl-2-pentanone (MIBK)

trans-1,3-Dichloropropene

BDL

8DL

Wildliey addressy cause and vance. recision. Accuracy and Service"

Parameter	method	detection	Limit	1-631 Page 3 Analysis
Dibromochloromethane 1,1,2-Trichloroehtane cis-1,3-Dichloroprope trans-1,3-Dichloroprope 1,1,2,2-Tetrachloroe Tetrachloroethene Methylbenzene (Tolue Ethyl Benzene Xylenes (Total) 2-Hexanone	e ene opene thane	1 1 1 1 1 1 1 1 1 3	Limit	BDL BDL BDL BDL BDL BDL 15 BOL
Acrolien Acrylonitrile 1,4-Dichloro-2-butan Ethyl Methacrylate Chlorobenzene 2-Butanone (Methyl E Styrene		1 1 1 1 tone) 50		8DL 8DL 8DL 8DL 8DL 8DL

Note: Bromofluorobenzene present

(BDL = Below Detection Limit)

Respectfully Submitted,

WLECCO

William F. Eberhardt Lab Director

Quality Analytical Labs, Inc.

"Precision, Accuracy and Service"

Warzyn Engineers, Inc. ATTN: James W. Wink 1 Pierce Place Itasca, IL 60143

Job #:1-630 Date: 6/13/1989

Sampling Date: unknown Analyses Date: 6/6-12/1989

Technique/Method: The samples were analyzed as per USEPA

SW-846

Identification: Two samples identified as:

Project Name: Croda Inks Corp

Project #: 40045.03 Location: Niles, IL

Results: Soil Pile #1

Total	Metals	E.P. Toxicity Metals
Cd NA Cr NA Pb NA Ag NA Se NA As NA Hg NA Zn NA Ni NA		(1.0mg/l (1.0mg/l (1.0mg/l (1.0mg/l (1.0mg/l (0.01mg/l (0.01mg/l NA
		(50.0mg/l
Sulfide (Tot Chlorine	>140 degr pass NA	

RECEIVED JUN 1 9 1989 WARZYN-ILLINOIS

1-630 Page 2

Results: Soil Pile #2

Total Metals	E.P. Toxicity Metals
Cu	(1.0mg/l (1.0mg/l (1.0mg/l (1.0mg/l (1.0mg/l (0.01mg/l (0.01mg/l NA
CN (Tot) <1.0mg/kg Sulfide (Tot) <1.0mg/kg Chlorine NA Flashpoint >140 degre Paint Filter pass Total Solids NA pH 8.4 NA = Not Applicable	ees F (Pensky-Martens C.C.)

NA = Not Applicable

Respectfully Submitted,

Maureen M. Gibbons

Lab Manager

Quality Analytical Labs, Inc.



PDC Laboratories, Inc.

4349 Southport Rd. • Peoria, IL 61615

		300 6 5.4803		*	
		CLIENT	Warz	yn Engineer	ing
		DATE RECEIVED			
		DATE OF REPORT			
		SAMPLE DESCRIPTION			. —
		P.O. NUMBER	James	wink	
		LAB NUMBER			
LAB NUMBER		ANALYSIS		RESU	LIS
906558	Total Phenol			4.1	mg/kg
	EOX		_	<12	mg/kg
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Claboratory Manager

John R. Drues (STE

PDC Laboratories. Inc.

Subsidiary of PDC Technical Carachi by Assurance Officer PDC Laboratories, Inc.

APPENDIX F CLOSURE CERTIFICATION DOCUMENTS

Attachment 5

This statement is to be completed and attached to each of the 4 copies of the closure plan. At least one of the copies must contain original signatures.

Closure Plan Certification Statement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

USEPA ID Number	Facility Name
/ / / / / / / / / / / / / / / / / / /	Lawrence L. Rokosz Director of Finance and Administration
hawaruck-Kokas Signature of Owner/Operator	Name and Title

Croda Inks Croporation

ILD002293124

October 5, 1989

Date

This statement is to be completed by both the responsible officer and by the registered professional engineer upon completion of closure. Submit three copies of this certification, including at least one copy with original signatures.

Closure Certification Statement

The hazardous waste management unit(s) at the facility described in this document has (have) been closed in accordance with the specifications in the <u>approved</u> closure plan. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If this is the closure of a unit which is subject to post-closure care requirements, the Owner/Operator hereby certifies that he has recorded the notation specified in 35 Ill. Adm. Code, Section 725.219(b)(1) as amended March 24, 1987.

USEPA ID Number	Facility Name
Signature of Owner/Operator	Name and Title
Signature of Registered P.E.	Name of Registered P.E. and Illinois Registration Number
Date	(P.E. Seal)

APPENDIX G
ISWS WELL LOGS

GEOLOGICAL AND WATER SURVEYS WELL RECORD

			COM	P 200 00 00 00 17	, 17
10.	Propert	y owner Richard W	eise	Well No	
		6120 Lincoln A			
	Driller	. <u>DuPage Pump,</u>	Inc Licens	se No. 92-1	14.7
11.	Permit	No. 22751	Date _	<u>4-20-73</u>	}
12.	Water f	rom Limestone	13. Cou	nty <u>Coo</u>	k
	at dent	thft.	Sec.	19 [TTT
14.		: Diamin.		<u> </u>	╂╌╂╼╂╼┫
		ı:ft. Slot		. <u>13</u> E	┾╌┾╌┽╌┩
	•		_	/	+-+
15.	Casing	and Liner Pipe			
Die	m. (in.)	Kind and Weight	From (Ft.)		SHOW CATION IN
	5	Steel 14.98	0		TION PLAT 10 Schmit
					ton Grove
					rmit)
16.	Size H	ole below casing: 5	in.		07
		levelft. below cas		ch is8	<u> </u> ft.
	above	ground level. Pumping lev	vel <u>110</u> ft.	when pumpin	g at <u>10</u>
	gpm fo	r2_ hours.			
18.	ī	ORMATIONS PASSED THROU	СH	THICKNESS	DEPTH OF BOTTOM
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					Thickness Post	- 1 T	- 540	
Y	TWO TYPE		1	++++	***			
	Drift, no	recer	Party.	7	1 65	-		
***	THE 1 TO 1 T. R	110716		401 4 4 44	10	13	过程	
***	Dolomite.	black	D1-	134				
ij]	timinous	Ligh	t exay		را مساء أور		产基件	
7	and pink dolomiti	anal	: Jihake G'i DTB	9-1	ZO	1:2	100	
3	No sample	The sterior	L 1 - L		ŽŽ.		- 186	
	11.00 75-1	00; sh	0	-	40			4
477	Polomite,	40 of				#	13.2	
1	drive ni	ma in	气息 化苯	1	:.: 50 11	Tal	100	
. !	Dolomite.	light	Cay		20	77.4	205	
r:	Dolomite, chert, w	_	FW;		10	1	- 446	
			gray	أحاب إ	. , ,	711	265	
. <u>. </u>	Dolomite, Shale, bi					41	295	
	Dolomite, RICHMOND	light	SLEA :	om a	120	1-1	415	7
.i.	Shale, bl	ue, do	lomitic	0	105		520	de
	GALENA-BL	ACK RI	VER ,		م.د د	, !	المنطق والماء	E P
- [Dolomite, Fo sample			3 11 3	20 10	+ +	540 550	
	Dolomite,	gray;	5681	01	210		700	
4	19" hole	; 568	of 15	1/2		1	F	N'A
	Dolomite.				20		VAN	
	Dolomite,				30		Mo	T.
	Dolamite,	gray.	ecue.	plue	35	4	344	
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Sandstone, fine to medium,			200	-
Sandstone, medium, white	75 90	, , , , ,	1010	
552' of 15 1/2" hole				
F 580' of 12 1/2" 50 1b				
B W. 1 . D1D2 and proint price should	. 55	1	1.068	1.3
Conglomerate-pebbles white		, ,	* 75. 75. 15	
chert in dearne gray	2.85	1	1090	17
Shale, red and green;	-			1
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ind green; dolomite,	- 30	at	1130	
grayconglowerate 1120		-	andria Harrista (marcharita)	-
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Sandstone, coarse, pink;	70		1200	
shale, red and green; 90° of 12 1/2° hole		+	TACO.	1
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Sandstone, fine, light	. ; ;		(3	Ţ
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Sandstone, fine, gray,				1.3
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Sandatone, medium to fine	· - · · •	1	1 1 m	4-4
white, slightly dolomiting	₽ 50		1320	13
Bundatone, coarse to med-	•		3 - 19	9
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	Total In Post In Processing Section 1981
ja V	Sandstone, fine to very fine light gray 20 1446
	Sandstone, coarge to fine
	EAU CLAIRE Sandstone, fine gray and
	pink, dolomitic; shale, 20 1460
. A	Shale, gray with layers of A.
	Sandstone, very fine gray, very dolomitic, glad-
	Sandstone, fine, light
	Bandstone, fine light
	Sandstone, fine to very
A	Sandstone, medium-fine, 50
	light gray Sandstone, very fine,
	gray Sandstone, medium to fine light gray, pink 26 1966
. Adam	MOUNT SIMON from 1790-1966
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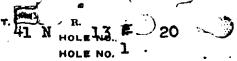
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TOWNSHI. R.13 COMPARTOWN Well (F.M. Gray). 1 FARM Morton Grove AUTHORITY ELEVATION 627' T. M. - Ground-water Section COLLECTOR DATE DRILLED 1 20.2F 77:20 00% CONFIDENTIAL 125'C. of Calif. AM 1600' N line, 700' W line of NW Thickness Douth STRATA F'oet In. Feat 128 128 Drift 162 Limestone 25⁻ 30. Shale hale and lime 165 510 Shale, sticky renton and Galena lime-845 335 242 stone 1087 Shale, sandy 1095 රි Marl, red 1106 11 Lime marl, hard, streaks Marl streaks, shelly 14 1120 lime 22 1142 Lime marl and shale <u>m</u>90 48 Magnesian limestone 22 1212 Marl, red 1275 1462 63 Shale, sandy 187 St. Peters sandstone This well was originally drilled with a 4-inch bottom, later it was reamed but to 8-inch dismeter to the 1452 feet in depth lined and sealed with 6 inch pipe to cut off the upper levels. This 6 inch pipe extends Ordinarily to about 232 feet from the bottom. this 232 ft. of exposed St. Peters sandstone should develop a flow of over 300 gallons per minute, but the pump after working an hour begins to churn and the water level drops pelow the suction. I am of the opinion that the 232 ft. is not delivering enough water County COOK Index No. 2020, 2F -DRILL RECORD

20-41N-13E

MPANY TOWN Well



	STRATA				l	Thickness				Depti						
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20-41H-100 **2020.2F**

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	Gross Point (Harts) Road a	nd Cal	idwe	11.	
	Black topsoil	1	, -	1	.,
,	Yellow clay	6			·#
5	Sand	- 2	7,	9	12
. ×	Sandy clay	40		49	771
	Hardpan	40	1.5	- 89	2
	Gravel	- 6	}	- 9 5	1
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OUNTY . COOK 558559

SLEMON ABBLOMBAL SURVEY, URBANA

31-411-178

Town Park Ridg-Company Suzer B. 38. т. Sec. Forest Preserve 32 Ne. Authority Hostzer Bros. 41 N Elevation 622 B.L. Collector Confidential **Date Drilled**

31001 W line of Section

	O'S line, 3100' W line of Section	Thickn		Depth		
do.	Btrata	Feet	In.	Feet	In	
	Yellow clay and sand	12		12		
	Blue clay and little gravel	26	į	38		
	Hard clay, sand and gravel	3		41		
	Soft clay, sand and gravel; Blue clay, sand and gravel	9)		50		
	Blue clay, sand and gravel	6		56		
	Hard pan, sand and gravel	25		81	i	
	Gravel	5		6 6		
	Limestone	44		130		
	Water level 13'6"					
	Drawndown at 30 g.p.m.					
	Total depth 130		,		ĺ	
	Depth in rock 44!		•		[
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COUNTY COOK

32-41N-100

(40430-20M)

SS 1945 ILLINOIS GEOLOGICAL SURVEY, URBANA

VOLATILE ORGANIC COMPOUND ANALYTICAL RESULTS CRODA INKS CORPORATION NILES, ILLINOIS

PARAMETER	SB01-1	\$901-2	\$801-3	SB02-1	\$802-2	\$902-3	SB03-1	\$803-2
NETHYLENE CHLORIDE	(B) 23	(8) 30	(8) 60	(8) 20	(B) 28	(B) 53	(B) 23	(8) 43
ACETONE	(B) 40	(B) 10	(B) 18	(B) 27	BOL	(8) 64	BOL	(8) 33
TRICHLOROETHENE	BOL	BD1.	BOŁ	90L	BDL	BD¢.	BDL	BDL
TOLUENE	BOL	BDL.	7	BDL	BD L	BDL	BDL	BDL
TICS	BOL	BDL	BOL	80L	BOL	BDL	BDL	BDŁ
TOTAL VOLATILES	0.0	0.0	7.0	0.0	0.0	0.0	0.0	0.0

- 2. SB01-1 DENOTES SOIL BORING NUMBER ONE AT A SPLET SPOON INTERVAL DEPTH OF 1 TO 3 FEET ETC.
- 3. SBQ1-2 DEMOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 3.5 TO 5.5 FEET ETC.
- 4. SBO1-3 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 6 TO 8 FEET ETC.
- 5. SB01-4 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 6.5 TO 10.5 FEET ETC.
- 6. BDL STANDS FOR "BELOW DETECTION LINIT"
- 7. J INDICATES AN ESTIMATED VALUE
- 8. B INDICATES THE ANALYTE WAS FOUND IN THE BLANK AS WELL AS THE SAMPLE

VOLATILE ORGANIC COMPOUND ANALYTICAL RESULTS (CONT'D) CRODA INKS CORPORATION NILES, ILLINOIS

PARAMETER	\$804-1	\$804-2	\$B04-3	SB05-1	\$805-2	S805-4	\$806-1	SB06-2
METMYLENE CHLORIDE	(B) 50	(8) 55	(B) 130	(B) 30	(B) 21	(B) 92	(8) 31	(B) 34
ACETONE	BOL.	(8) 7	(8) 46	(B) 54	BOL	(B) 38	(B) 10	(B) 6
TRICHLORGETHENE	BDL	BOL	4	. BDL	BOL	BDL	BOL	9DL
TOLUENE	BDL	BOL	26	9	BDL	8	(J) 3	8DL
TICS	80L	BDL	7.5	B DL	BDL	801	11	8DL
TOTAL VOLATILES	0.0	0.0	37.5	9.0	0.0	8.0	14.0	0.0

- 2. SB01-1 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOOM INTERVAL DEPTH OF 1 TO 3 FEET ETC.
- 3. SB01-2 DENOTES SOIL BORING MUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 3.5 TO 5.5 FEET ETC.
- 4. SB01-3 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOOM INTERVAL DEPTH OF 6 TO 8 FEET ETC.
- 5. SB01-4 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOOM INTERVAL DEPTH OF 8.5 TO 10.5 FEET ETC.
- 6. BOL STANOS FOR "BELOW DETECTION LIMIT"
- 7. J INDICATES AN ESTIMATED VALUE
- 8. 8 INDICATES THE ANALYTE WAS FOUND IN THE BLANK AS WELL AS THE SAMPLE

VOLATILE ORGANIC COMPOUND ANALYTICAL RESULTS (CONT'D) CRODA IMAS CORPORATION NILES, ILLINOIS

PARAMETER	SB07-1	\$807-2	SB08-1	SB08-2	\$B09-1	SB09-2	SB10-1	\$810-2	SB11-1	5811-2	SB11-4
METNYLENE CHLORIDE	(8) 24	(B) 110	(B) 30	(8) 120	(B) 31	(B) 29	(8) 19	(8) 32	(8) 23	(B) 28	(B) 44
ACETONE	(B) 18	(B) 17	(8) 14	(B) 38	(8) 26	(B) 6	BOL	(8) 26	BOL	(8) 17	(B) 14
TRICHLOROETHENE	BDL	BDL	BDL	BOL	BOL	BDL	BOL	BDL	BOL	BOL	80L
TOLUENE	(J) 2	(1) 3	(J) 2	(J) 1	60	(J) 5	BDL	BOL	BOL.	BOL	8 0L
TICS	90 L	BDL	8DL	BD L	BOL	80L	BOL	BOL	BOL	9DL	BDL
TOTAL VOLATILES	2.0	3.0	2.0	1.0	60.0	5.0	0.0	6.0	0.0	0.0	0.0

- 2. S801-1 DEMOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 1 TO 3 FEET ETC.
- 3. S801-2 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOOM INTERVAL DEPTH OF 3.5 TO 5.5 FEET ETC.
- 4. SB01-3 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 6 TO 8 FEET ETC.
- 5. SB01-4 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 8.5 TO 10.5 FEET ETC.
- 6. 80L STANOS FOR "BELOW DETECTION LIMIT"
- 7. J INDICATES AN ESTIMATED VALUE
- 8. 8 INDICATES THE AMALYTE WAS FOUND IN THE BLANK AS WELL AS THE SAMPLE

VOLATILE ORGANIC COMPOUND AMALYTICAL RESULTS (CONT'D) CRODA INKS CORPORATION NILES, ILLINOIS

PARAMETER	\$812-1	5812-2	S812-3	8813-1	SD13-2	SB14-1	SB14-2	SB14-3	\$815-1	\$815-2
METHYLEME CHLOREDE	(8) 28	(0) 25	(8) 25	(B) 40	(8) 20	(B) 17	(8) 16	(8) 19	(B) 16	(B) 26
ACETONE	BOL	8DL	(B) 11	73	(B) 9	(B) 19	BOL	BDL	(8) 6	(8) 23
TRICHLOROETHENE	BOL	BOL	9 0L	BOL	8DL	BDL	ed1	BDL	BOŁ	80L
TOLUENE	BDL	BDL.	B DL	BOL	BDL	BOL	90L	(J) 5	(J) 4	BOL
TICS	8DL	BOL	BOL	BOL	BOL	BDL	BOL	SQ.	BOL	adl
TOTAL WOLATILES	6.0	0.6	0.0	0.0	0.0	0.0	0.0	5.0	4.0	0.0

- 2. SBO1-1 DENOTES SOIL BORING MUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 1 TO 3 FEET ETC.
- 3. S801-2 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 3.5 TO 5.5 FEET ETC.
- 4. SB01-3 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 6 TO 8 FEET ETC.
- 5. SB01-4 DEMOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 8.5 TO 10.5 FEET EYC.
- 6. BOL STANDS FOR "BELOW DETECTION LIMIT"
- 7. J INDICATES AN ESTIMATED VALUE
- 8. B INDECATES THE AMALYTE WAS FOUND IN THE BLANK AS WELL AS THE SAMPLE

VOLATILE ORGANIC COMPOUND ANALYTICAL RESULTS (CONT'D) CRODA INKS CORPORATION NILES, ILLINOIS

PARAMETER	\$B16-1	SB16-2	SB16-3	SB16-4
METNYLENE CHLORIDE	(B) 17	(B) 31	(8) 43	(#) 30
ACETONE	(B) 5	(B) 13	(B) 9	(B) 6
IR I CHLOROETHENE	80L	BDL	80 L	. 8
TOLUENE	BDL	BDL	20	BDL
TICS	8DF	80L	BDL	BOL
TOTAL VOLATILES	0.0	0.0	20.0	8.0

- 2. SB01-1 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 1 TO 3 FEET ETC.
- 3. SB01-2 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 3.5 TO 5.5 FEET ETC.
- 4. S801-3 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOOM INTERVAL DEPTH OF 6 TO 8 FEET ETC.
- 5. SB01-4 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 8.5 TO 10.5 FEET ETC.
- 6. BOL STANDS FOR "BELOW DETECTION LIMIT"
- 7. J INDICATES AN ESTIMATED VALUE
- 8. B INDICATES THE ANALYTE WAS FOUND IN THE BLANK AS WELL AS THE SAMPLE

POLYNUCLEAR AROMATIC MYDROCARBON ANALYTICAL RESULTS CRODA INKS CORPORATION NILES, ILLINOIS

PARAMETER	SB01-1	\$901-2	SB01-3	\$802-1	\$B02-2	\$602-3	SB03-1	se03-2
PHEMANTIREME	9DL	BO1	BD1.	8DL	BOL	BOL	BDL	BDL
FLUORANTHEME	BDL	11	80 F	BDL	BOL	BDL	BOL	BOL
PYREME	BD4.	8DL	BOŁ	. 90L	BDL	BDL	8DF	BDL
BEHZO(A)ANTHRACENE	BDL	4	BDL	BOL	BOL	BDŁ	BDL	901
GENZO(B) FLUORANTHEME	BDL	4.3	BOL	8DF	BDL	9DL	BDL	BOŁ
BENZO(K) FLUORANTHENE	8D/	2.5	BDL	BOL	BDL	BOL	BOL	B DL
BENZO(A)PYRENE	BOL	4	80 L	BDL	BOL	BDL.	OD4	BOL
BENZO(G, N, I) PERYLENE	BDL	BDL	4.8	BOL	9DL	4.7	BDL	BOL
IDENO(1,2,3)PYRENE	BDL	BDL	BOL	8DL	BOL	BOL	BDL	BOL
TOTAL PMA'S	0.0	25.8	4-8	0.0	0.0	4.7	9.0	0.0

- 2. S901-1 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 1 TO 3 FEET ETC.
- 3. S801-2 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 3.5 TO 5.5 FEET ETC.
- 4. SB01-3 DEMOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 6 TO 8 FEET ETC.
- 5. S801-4 DEMOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 8.5 TO 10.5 FEET ETC.
- 6. BDL STANDS FOR "BELOW DETECTION LINIT"
- 7. J INDICATES AN ESTIMATED VALUE
- 8. B INDICATES THE AMALYTE WAS FOUND IN THE BLANK AS WELL AS THE SAMPLE

POLYNUCLEAR AROMATIC HYDROCARBON ANALYTICAL RESULTS (CONT'D) CRODA INKS CORPORATION NILES, ILLINOIS

PARAMETER	S 8 04-1	se04-2	\$804-3	\$805-1	SB05-2	SB05-4	\$806-1	SB06-2
march & M W I (discribe)	80L	8DŁ	BO£.	B D£	B DŁ	B DL	8DL	SDL.
PHENANTHREME		BDL	BOL	BDL	BDL	8DL	9DL	4.4
FLUORANTHENE	BDL	-		9DL	BOL	apr	BOL	BOL
PYRENE	BOL	80L	BDL		*	8DL	8DL	,
BENZO(A)ANTHRACENE	BOL	BDL	BDL	BOL	801			200
BENZO(B)FLUORANTNENE	80L	8DL	9DL	BDL.	BOL	SDL	BOL	BDL
BENZO(K) FLUORANTHENE	BOL	BOL	8DL	80 L	80L	BDL	8DL	8 0L
BENZO(A)PYRENE	RDL	e dl	SDŁ.	BOL	edt.	BOL	BOL	2.3
BENZO(G.W.I)PERYLENE	BDŁ	8DL	SOL	BOL	8DL	80L	BDL	5.4
			SOL	BOL	SOL.	BOL	BOL	BDL
IDENO(1,2,3)PYRENE	80L	BDL	BUL	8 VL				
TOTAL PNA'S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.1

- 2. SMOI-1 DEMOTES SOIL BORING NUMBER ONE AT A SPLIT SPOOM INTERVAL DEPTH OF 1 TO 3 FEET ETC.
- 3. SB01-2 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 3.5 TO 5.5 FEET ETC.
- 4. SB01-3 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 6 TO 8 FEET ETC.
- 5. SB01-4 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 8.5 TO 10.5 FEET ETC.
- 6. BDL STANDS FOR "BELOW DETECTION LIMIT"
- 7. J INDICATES AN ESTIMATED VALUE
- 8. B INDICATES THE AMALYTE WAS FOUND IN THE BLANK AS WELL AS THE SAMPLE

POLYNUCLEAR AROMATIC HYDROCARBON AMALYTICAL RESULTS (CONT'D) CRODA INKS CORPORATION NILES, ILLINOIS

PARAMETER	S807-1	\$807-2	SB08-1	SB08-2	SB09-1	S809-2	SB10-1	SB10-2	SB11-1	\$811-2	\$B11-4
PHENANTHRENE	90 L	BDL	BOŁ,	BD1.	9DL	B OŁ	801.	BOL	UDIL	90 1.	BOL
FLUORANTHENE	5.8	13	BOL.	BDL	8D1.	BOL.	8 0L	BOL	3.4	BOL	BOL
PYREME	BOL	80L	2.4	BOL	BDL	BOL	BOŁ.	BOI.	BOL	BOL	36
BENZO(A) ANTHRACEME	2.1	3.2	1.5	BOL	BO L	BD1.	BOL	90L	1.4	BOL	BOL
BENZO(B) FLUORANTHEME	2.2	BOL	BOL	BDL	BDL	BOL.	BOL	90 L	BOL	30L	BDŁ
SENZO(K) FLUORANTHEME	BDL.	BDL	BOL	BDL	8DL	BOL	BOŁ	BOL	80 L	BDL	BOL
BENZO(A)PYRENE	1.7	2.8	80 L	BDL	8 ₽L	BDL	BOL	BOL	1.3	BOL	BOL
BENZO(G, H, I)PERYLENE	8DL	30L	8DL	BOL	BDL	6.9	BD t,	BDL	BOL	BOL	BOL
IDENO(1,2,3)PYRENE	801.	8DL	BDL	BOL	OD L	12	BOL	BOL	BOL.	BD4,	BOL
TOTAL PHA'S	11.8	19.0	3.9	0.0	0.0	18.9	0.0	9.0	6.1	0.0	36.0

- 2. S801-1 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 1 TO 3 FEET ETC.
- 3. \$801-2 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 3.5 TO 5.5 FEET ETC.
- 4. S801-3 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 6 TO 8 FEET ETC.
- 5. SB01-4 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 8.5 TO 10.5 FEET ETC.
- 6. BOL STANDS FOR "BELOW DETECTION LIMIT"
- 7. J INDICATES AN ESTIMATED VALUE
- 8. 8 INDICATES THE ANALYTE WAS FOUND IN THE BLANK AS WELL AS THE SAMPLE

POLYNUCLEAR AROMATIC HYDROCARBON ANALYTICAL RESULTS (CONT'D) CRODA INKS CORPORATION NILES, ILLINOIS

PARAMETER	SB12-1	SB12-2	SB12-3	SB13-1	S813-2	S814-1	SB14-2	S814-3	\$815-1	SB15-2
THE WALL TIME THE	BOL	BD1.	BOL	BD E.	SDL	501.	90 L	BDL.	BDL	BOL
PHENANTHREME	BOL	BOL	BOL	140	BDL	3.2	32	9DL	4.1	BOL
FLUORANTHENE				110	BDL	BOL	40	BDL	BDL	BOL
PYRENE	≋DL	BOL	BOL	•					1.4	BOL
BENZO(A)ANTHRACEME	BOL	BDL	BDL.	47	ad L	1.4	12	BDL		
BENZO(B)FLUORANTHENE	BDL	BDL	8DL	40	80 L	2.1	16	4	BO!.	BDL
BENZO(K) FLUORANTHENE	BOL	BDL	BOL	25	8D L	BOL	9.4	BOŁ	BIDL	BDL
BENZO(A)PYREME	BDL	BDL	BOL	38	8DL	1.4	15	BOL	BCL	BOL.
BEHZO(G, N, 1)PERYLENE	8DL	BDL.	BOL	29	80L	801.	13	8.4	BDŁ.	8 0L
IDENO(1,2,3)PYRENE	BOL	BOL	BDL	BOL	SOL.	BOL	11	90L	BO L	BDL
TOTAL PHA'S	0.0	0.0	0.0	429.0	0.0	8.1	148.4	12.4	5.5	0.0

- 2. SB01-1 DEMOTES SOIL BORING NUMBER ONE AT A SPLIT SPOOM INTERVAL DEPTH OF 1 TO 3 FEET ETC.
- 3. SB01-2 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOOM INTERVAL DEPTH OF 3.5 TO 5.5 FEET ETC.
- 4. SBO1-3 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 6 TO 8 FEET ETC.
- 5. SECT-4 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 8.5 TO 10.5 FEET ETC.
- 6, BOL STANDS FOR "BELOW DETECTION LIMIT"
- 7. J INDICATES AN ESTIMATED VALUE
- 8. 8 INDICATES THE AMALYTE WAS FOUND IN THE BLANK AS WELL AS THE SAMPLE

POLYMUCLEAR AROMATIC COMPOUND ANALYTICAL RESULTS (CONT'D) CRODA INKS CORPORATION NILES, ILLINOIS

PARAMETER	SB16-1	SB16-2	\$B16-3	\$816-4	
PREMANTHRENE	BOL	80L	BOL	BDL.	
FLUORANTHENE	9.5	80L	2.9	BOL	
PYREME	BDL	BDL	B DL	BDL	
SENZO(A)ANTHRACENE	3.3	90 L	1.3	BOL	
BENZO(B) FLUORANTHENE	4.5	BOL	2.8	BOL.	
BENZO(K) FLUORANTRENE	2.4	BOL	BOL	BDL	
NENZO(A)PYRENE	3.6	BDL	BDŁ	8 9L	
BENZO(G, N, I)PERYLENE	BOL	BOL	5.3	4.3	
LOENO(1,2,3)PYRENE	BDL	80L	8DL	10	
TOTAL PHA'S	23.3	0.0	12.3	14.3	

- 2. \$891-1 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH
- 3. SB01-2 DEMOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH
- 4. S801-3 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOOM INTERVAL DEPTH
- 5. \$801-4 DENOTES SOIL BORING NUMBER ONE AT A SPILIT SPOON INTERVAL DEPTH
- 6. BOL STANDS FOR "BELOW DETECTION LINET"
- 7. J INDICATES AM ESTIMATED VALUE
- 8. B INDICATES THE ANALYTE WAS FOUND IN THE BLANK AS WELL AS THE SAMPLE

HEAVY METAL ANALYTICAL RESULTS CRODA INKS CORPORATION NILES, ILLINOIS

PARAMETER	SB01-1	SBC2-1	SB03-1	\$804-1	SB05-1	S806-1	\$807-1	\$808-1
PH	8.16	7.84	7.88	7.41	7.79	8.00	8.00	7.84
CHROWIUM LEAD	11.2 28.0	11.2 BOL	9.40 BDL	24.6 B OL	10.8 BOL	14.2 BDL	9.59 BDL	12.2 BDL

- 2. SBO1-1 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOOM INTERVAL DEPTH OF 1 TO 3 FEET ETC.
- 3. SB01-2 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 3.5 TO 5.5 FEET ETC.
- 4. S801-3 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 6 TO 8 FEET ETC.
- 5. \$801-4 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 8.5 TO 10.5 FEET ETC.
- 6. BOL STANOS FOR "BELOW DETECTION LIMIT"
- 7. J INDICATES AN ESTIMATED VALUE
- 8. B INDICATES THE AMALYTE WAS FOUND IN THE BLANK AS WELL AS THE SAMPLE

MEAVY METAL ANALYTICAL RESULTS (CONT'D) CRODA INKS CORPORATION NILES, ILLINOIS

PARAMETER	S809-1	SB10-1	SB1 1~1	5812-1	s813-1	5614-1	\$815-1	SB16-1
PH	7.86	7.58	7.45	7.75	7.70	7.73	8.09	8.10
CHROPELM	8.00	9.00	13.3	7.78	19.4	6.60	13,2	12.8
LEAD	8DL	BDL	8DL	8DL	67.9	≇DL	BDL	a dr

- 2. S801-1 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 1 TO 3 FEET ETC.
- 3. SB01-2 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 3.5 TO 5.5 FEET ETC.
- 4. SMO1-3 DENOTES SOIL BORING MUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 6 TO 8 FEET ETC.
- 5. SB01-4 DENOTES SOIL BORING NUMBER ONE AT A SPLIT SPOON INTERVAL DEPTH OF 8.5 TO 10.5 FEET ETC.
- 6. BOL STANDS FOR "BELOW DETECTION LINIT"
- 7. J INDICATES AN ESTIMATED VALUE
- 8. B INDICATES THE ANALYTE WAS FOUND IN THE BLANK AS WELL AS THE SAMPLE

GBG-AquaSearch

ENVIRONMENTAL SERVICES: Analytical, Field & Consulting Air Water & Wastewater Solid & Hazardous Waste Industrial Hygiene S026 8410095 JBU

S.E.T. LIQUID WASTE SYSTEMS, INC.

350 SUMAC ROAD

WHEELING

,IL 60090

ATTN: KATHLEEN KROEPIL

SAMPLE 86274-S07325 #6762-110/UNDERGROUND TANK SLUDGE/CRODA INKS DATE COLLECTED 9/30/86 DATE RECEIVED 10/01/86

TEST NAME RESULT : UNITS EP TOXICITY EP LIMIT HAZ.CODE CADMIUM - EP 0.64 MG/L 1.0 CHROMIUM - EP 0.10 MG/L 5.0 LEAD - EP 0.8 MG/L 5.0 BARIUM - EP 0.87 MG/L 100.0 SILVER - EP < 0.01 MG/L 5.0 ARSENIC - EP 0.004MG/L 5.0 SELENIUM - EP 0.066 MG/L 1.0 MERCURY - EP < 0.0004 MG/L 0.2 PH (UNITS) 9.5 2.0 - 12.5TOTAL SULFIDE <1 PPM FLASH POINT (FAHRENHEIT) 110 DEG. F 140.0 D001 €0.64^N (1000) SPECIFIC GRAVITY G/ML BTU'S 14000 BTU'S/LB % CHLORINE -0.19 TOTAL SOLIDS 29 ASH CONTENT 3.6

METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES, 1979, EPA-600/4-79-020.

TEST METHODS FOR EVALUATING SOLID WASTE, PHYSICAL/CHEMICAL METHODS, 1982, EPA SW846.

ANNUAL BOOKS OF ASTM STANDARDS. 1982.

OR CALL TOLL FREE: 1-800-592-5900, WAIT FOR DIAL TONE AND DIAL EXTENSION 332.

ANY REMAINING WASTE SAMPLES WILL BE RETURNED TO THE ADDRESS LISTED ABOVE 8 WEEKS FROM THE

RECEIVING DATE OF THIS REPORT.

N/T - NOT TESTED

N/A - NOT APPLICABLE

APPROVAL

81 312 968 5488 CHEM-CLEAR/CHGD

May 31,89 13:44 P.02



WASTE ANALYSIS REPORT/DECISION SHEET

DATE IN 3-6-89 DATE OUT RESULTINOTE ANALYSIS: ACCEPTS RESULTINOTE ANALYST: VIND PHYSICAL DESCRIPTION: SEMI-SOLID APPEARANCE: GYAY WATER MIX: SINXS REACTIVE SULFIDES SCREEN: PC8'8: TOO: SUPPLEMENTAL ANALYSIS: RESULTS APPROVED DISAPPROVED DISAPPROVED DISAPPROVED DISAPPROVED CODE: CCR - SO		•	- W W.	8/30	LAB SAMPLE TRACKING #
DATE IN 3-6-89 DATE OUT LAB # 022203 ANALYSIS: ACCEPTS RESULTINOTE ANALYST: VAD PHYSICAL DESCRIPTION: SEMI-SOLO APPEARANCE: GTAY WAS SOLID: 5000 PH: 22 WATER MIX: 31025 IGNITABLE SCREEN: ND REACTIVE GYANIDES SCREEN: ND REACTIVE SULFIDES SCREEN: ND REACTIVE SULFIDES SCREEN: ND RESULTS APPROVED: MARKET MARKET DATE: 3-6-89 LABORATORY MANAGER DISAPPROVED					BOX RETAIN #
ANALYSIS: ACCEPTS RESULT/NOTE ANALYST: VAD PHYSICAL DESCRIPTION: SCMI - SOLO APPEARANCE: GTAY SOLID: SOLO PH: WATER MIX: SINKS IGNITABLE SCREEN: MC STU: PCS SCREEN: MC REACTIVE CYANIDES SCREEN: FCS'S: TOC: SUPPLEMENTAL ANALYSIS: RESULTS APPROVED: MALLAND LABORATORY MANAGER DISAPPROVED DISAPPROVED DISAPPROVED DISAPPROVED COM - CALAGO ANALYST: VAD APPEARANCE: ANALYST: VAD ANALYST: VAD APPEARANCE: ANALYST: VAD ANALYST: VAD APPEARANCE: ANALYST: VAD APPEARANCE: ANALYST: VAD ANALYST: VAD APPEARANCE: ANALYST: VAD ANALYST: VAD APPEARANCE: ANALYST: VAD ANALYST: VAD ANALYST: VAD APPEARANCE: ANALYST: VAD ANALYST:			7	32711	PROFILE SHEET #
ANALYSIS: ACCEPTS RESULTINOTE PHYSICAL DESCRIPTION: SEMI-SOLID: SEMI-SOLID: SOLID: SOL	DATE	3-6-89	DATE OUT		LAB # 022203
## SOLID: 50% PH: 42 WATER MIX: 310 KS IGNITABLE SCREEN: 2190 BTU: 202 ## CHLORINE: ND REACTIVE CYANIDES SCREEN: ND REACTIVE SULFIDES SCREEN: ND PCS'S: ND REGULTS APPROVED: MANAGER I APPROVED ID DISAPPROVED DISAPPROVED DISAPPROVED DISAPPROVED DISAPPROVED DISAPPROVED CAURA CAURAGE TOCK CAURAGE COURA CAURAGE COURA CAURAGE TOCK COURA CAURAGE TOCK T	ANAL PHYS	Lysis: Macepys Sical description:	RESULT/NO	OTE .	ANALYST: VYD
WATER MIX: SINKS IGNITABLE SCREEN: SMO BTU: POOR MCHLORINE: MTD REACTIVE CYANIDES SCREEN: ND PCB'S: TOC: SUPPLEMENTAL ANALYSIS: RESULTS APPROVED: MANAGER DISAPPROVED DISAPPROVED DISAPPROVED DISAPPROVED DISAPPROVED DISAPPROVED DISAPPROVED		<u>~</u>	X		
WATER MIX:					
IGNITABLE SCREEN: DE STU: POS SCREEN: ND REACTIVE CYANIDES SCREEN: ND REACTIVE SULFIDES SULFIDES SCREEN: ND REACTIVE SULFIDES SULFIDES SULFIDES SULFIDES SULFIDES					
# CHLORINE:				<u> بىدا ئالى ئىسىسى شىسىسى سىيى سىيىت سىيان ئالى ئالى ئ</u>	
REACTIVE CYANIDES SCREEN: ND REACTIVE SULFIDES SCREEN: ND PCS'S: TOC: SUPPLEMENTAL ANALYSIS: RESULTS APPROVED: MANAGER DISAPPROVED DISAPPROVED DISAPPROVED DISAPPROVED DISAPPROVED DISAPPROVED CUIX - CALLED	IGNI	Table Screen:	40		
REACTIVE CYANIDES SCREEN: ND REACTIVE SULFIDES SCREEN: ND PCB'S:	BTU:	7502			
REACTIVE SULFIDES SCREEN: ND PCB'S:	% C	HLORINE:	D	Marie Malayana and Antonio Ant	
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DISPOSAL OUTLET: CWK - CALLEGO	Ċ	APPROVED			
44.4.54		DISAPPROVED		•	
CODE: CCR-SO	DISI	POSAL OUTLET:	CWK -	Chicago	
		CODE:	CCR-	so	





Engineers & Scientists Waste Management Water Resources Site Development Special Structures Geotechnical Analysis

July 28, 1989 40045.03

Mr. Larry Rokosz Croda Inks Corporation 7777 North Merrimac Avenue Niles, Illinois 60648-3490

ILD 002293 124



OFFICE OF RCRA WASTE MANAGEMENT DIVISION EPA, REGION V

RECEIVED WMD RCRA

RECORD CENTER

Demonstration and Certification for Hazardous Waste Landfill Disposal Croda Inks Corporation Niles, Illinois

Dear Mr. Rokosz:

As requested by the Croda Inks Corporation, Warzyn Engineering Inc. (Warzyn) has prepared this demonstration and certification, pursuant to 40 Code of Federal Regulations (CFR) Section 268.8a(2). The demonstration and certification state that the Croda Inks Corporation, through services provided by Warzyn, has made a good faith effort to locate and contract with practically available treatment and recovery facilities and that landfilling of the below described waste is the most practical disposal alternative currently available.

DEMONSTRATION

The waste material is soil which was contaminated when ink sludge (a KO86 waste solvent sludge subcategory) leaked and/or spilled during underground storage tank (UST) use at the above address. Soil contaminated with KO86 hazardous waste qualifies as a first third soft hammer waste. The volume of contaminated concrete and soil to be disposed of is estimated to be approximately 60 cubic yards. Two representative soil samples were collected by Warzyn Engineering Inc. (Warzyn) on June 6, 1989, from the stockpiled soil and analyzed for volatile organic compounds (VOCs) (SW-846 methods 8010 and 8020 of the Resource Conservation and Recovery Act (RCRA)) and RCRA hazardous waste characteristics.

Mr. Larry Rokosz Croda Inks Corporation Project No. 40045.03

VOC analysis identified total xylene and toluene in sample one as 44 parts per billion (ppb) and 451 ppb respectively. VOC analysis identified total xylene levels at 15 ppb in the second sample. The E.P. Toxicity analysis showed that all eight primary metals were below the defined limit identifying the waste as hazardous. The laboratory analysis is attached.

KO86 waste (solvent sludge subcategory) is hazardous as defined by RCRA for containing constituents in excess of the EPA hazardous limits for hexavalent chromium and lead. The analysis revealed chromium and lead levels below E.P. Toxicity hazardous waste criteria. VOC levels were identified at relatively low concentrations within the soil matrix. Because the waste material consists of soil and some large concrete fragments, recycling or recovery is not practical. Since the detected VOC and heavy metal levels are low and the volume of excavated soil is small, in-situ bioremediation or fixation is also not a practical alternative. The facility does not possess a Part A or Part B RCRA permit to perform on-site treatment and/or disposal of the excavated soil.

One of the best available treatment alternatives for this waste is off-site incineration. Three incinerator facilities were contacted by Warzyn for disposal purposes. The facility information is shown in Table 1. This alternative is not believed to be practical as demonstrated from a cost analysis. The cost of incineration, including shipment but excluding concrete crushing, ranges from approximately \$1,100/ton to \$2,125/ton. The cost to landfill the excavated soil, including shipment, is approximately \$150/ton. Based on the fact that soil is below E.P. Toxicity levels for the constituents defining this material as a hazardous waste, and that the ratio of incineration versus landfilling costs is greater than 2.0 (which U.S. EPA has defined as not practical), landfilling is believed to be the only practical disposal alternative presently available.



CERTIFICATION

I certify, under penalty of law, that the requirements of 40 CFR 268.8(a)l have been met and that disposal in a landfill or surface impoundment is the only practical alternative to treatment currently available. I believe that the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

CERTIFICATION FOR CRODA INKS

Walter Banker

Name

Vice President of Finance

Title

Signaturé

July 28, 1989

Date



Mr. Larry Rokosz Croda Inks Corporation Project No. 40045.03

Warzyn appreciates the opportunity to be of service to you on this project. If you have any questions, contact us at (312) 773-8484.

Sincerely,

WARZYN ENGINEERING INC.

Mark S. Rothas

Senior Project Engineer

Attachment: Table 1

WP

40045L04JDW/gmg/MSR



TABLE 1 TREATMENT FACILITY CONTACT INFORMATION CRODA INKS CORPORATION NILES, ILLINOS

Facility	Contact Person	Facility Location	<u>Telephone</u>	<u>Contact Date</u>	<u>Cost/Ton</u>
Rollins Incinerator	David Kurweg	Deer Park, Texas	(312) 260-9470	06/16/89	\$ 2,125
LWD, Inc.	Rose Burton	Calvert City, Kentucky	(502) 395-8313	06/16/89	\$ 1,100
ENSCO	Jenny Henson	Little Rock, Arkansas	(501) 223-4100	06/16/89	\$ 2,075(1)
(1) Cannot accept waste	e in bulk - waste :	must be received in drums			
Adams Center	Kim Bigalski	Fort Wayne, Indiana	(312) 513-4519	06/20/89	\$ 160(2)
Peoria Disposal	Cheryl Franks	Peoria, Illinois	(309) 688-0760	06/21/89	\$ 125

⁽²⁾ Adams Center is not accepting any $\underline{\text{new}}$ waste streams for this year and possibly for the next 3 to 5 years.



Quality _nalytical Laboratorie _ Inc.

"Precision, Accuracy and Service"

Warzyn Engineers, Inc. ATTN: James W. Wink 1 Pierce Place Itasca, IL 60143

Job #:1-631 Date: 6/12/1989

Sampling Date: unknown Analyses Date: 6/6-12/1989

Technique/Method: The samples were analyzed as per USEPA SW-846

methods 8010 and 8020

Identification: Two samples identified as:

Project Name: Croda Inks Corp

Project #: 40045.03 Location: Niles, IL

All results expressed in ug/kg (ppb)

Results: Soil Pile #1

Parameter	method detection Limit	Analysis
Chloromethane	5	BDL
Bromomethane	5 5	BDL
Vinyl Chloride	5 5	BDL
Chloroethane	5	BDL
Methylene Chloride	1.	BDL
Trichlorofluorometha	ne 1	BDL
Acetone	75	BDL
Carbon Disulfide	1	BDL
Dibromomethane	1	BDL
Dichlorofluoromethar	ne 1	BDL
Ethanol	25	BDL
Iodomethane	1	BDL
1,1-Dichloroethane	1	BDL
1,1-Dichloroethene	1	BDL
trans-1,2-Dichloroet	thene 1	BOL
Trichloromethane (C	Chloroform) 1	BDL
1,2-Dichloroethane	1	BDL.
1,1,1-Trichloroethar		BDL
1,2,3-Trichloropropa		BDL
Vinyl Acetate	25	BDL
Tetrachloromethane(BDL
Bromodichloromethane		BDL
1,2-Dichloropropane	1	BDL
Tribromomethane (Bro		BDL
4-Methyl-2-pentanone		BDL
trans-1,3-Dichloropy		BDL
2-Chlorovinyl Ether	1	BDL
Trichloroethene	1	BDL
Benzene	1	BDL
Dibromochloromethane		BDL
1,1,2-Trichloroehtar		BDL
cis-1,3-Dichloroprop	pene 1	BDL

Quality "naiytical Laooratories inc.

. recision, Accuracy and Service"

1-630 Page 2

Results: Soil Pile #2

Total	Metals	E.P. Toxicity Metals
Cd NA Cr NA Pb NA Ag NA Se NA As NA Hg NA Zn NA Ni NA Fe NA		(1.0mg/l (1.0mg/l (1.0mg/l (1.0mg/l (1.0mg/l (1.0mg/l (0.01mg/l NA
Sulfide (Tot Chlorine	>140 degr pass NA	

NA = Not Applicable

Respectfully Submitted,

Maureen M. Gibbons

Lab Manager

Quality Analytical Labs, Inc.

Quality nalytical Laboratorie Inc. "Precision, Accuracy and Service"

1-631 Page 2

Parameter	method detection Limit	Analysis
trans-1,3-Dichloropy 1,1,2,2-Tetrachloroe Tetrachloroethene Methylbenzene (Tolue Ethyl Benzene Xylenes (Total) 2-Hexanone Acrolien Acrylonitrile 1,4-Dichloro-2-butan Ethyl Methacrylate Chlorobenzene 2-Butanone (Methyl B Styrene Note: Bromofluoroben	ethane 1 1 2 2 2 2 2 2 2 3 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	BOLL 1 BOLL 1
Results: Soil Pile	#2	
Parameter	method detection Limit	Analysis
Chloromethane Bromomethane Vinyl Chloride Chloroethane Methylene Chloride Trichlorofluorometha Acetone Carbon Disulfide Dibromomethane Dichlorofluorometha Ethanol Iodomethane 1,1-Dichloroethane 1,1-Dichloroethane trans-1,2-Dichloroe Trichloromethane 1,1-Trichloroethane 1,1,1-Trichloroethane 1,2,3-Trichloroprop Vinyl Acetate Tetrachloromethane (Bromodichloromethane 1,2-Dichloropropane Tribromomethane (Bromodichloromethane 1,2-Dichloropropane Tribromomethane Carbon Car	75 1 1 1 1 25 1 1 1 1 1 1 1 1 1 1 1 1 1 1	80L 80DL 80DL 80DD 80DD 80DD 80DD 80DD 8

Quality Analytical Lagoratories inc.

recision, Accuracy and Service"

Parameter	method det	tection L	Page 3 Analysis
Dibromochloromethane 1,1,2-Trichloroehtane cis-1,3-Dichloroprope trans-1,3-Dichloropro 1,1,2,2-Tetrachloroe Tetrachloroethene Methylbenzene (Tolue Ethyl Benzene Xylenes (Total) 2-Hexanone Acrolien Acrylonitrile 1,4-Dichloro-2-butane Ethyl Methacrylate Chlorobenzene 2-Butanone (Methyl E Styrene	ene opene chane ne)	1 1 1 1 1 1 1 3 10 1 1 1 1 1 1 1 1 1 1 1	80L 80L 80DL 80DL 80DD 80DD 80DD 80DD 80

Note: Bromofluorobenzene present

(BDL = Below Detection Limit)

Respectfully Submitted,

WLECC

William F. Eberhardt Lab Director

Quality Analytical Labs, Inc.

quality "naiytical Laboratories" inc.

. recision, Accuracy and Service"

Warzyn Engineers, Inc. ATTN: James W. Wink 1 Pierce Place Itasca, IL 60143

Job #:1-630 Date: 6/13/1989

Sampling Date: unknown Analyses Date: 6/6-12/1989

Technique/Method: The samples were analyzed as per USEPA

SW-846

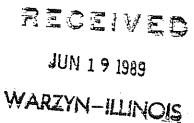
Identification: Two samples identified as:

Project Name: Croda Inks Corp

Project #: 40045.03 Location: Niles, IL

Results: Soil Pile #1

Total Metals	E.P. Toxicity Metals
Cu	<pre></pre> <pre>(1.0mg/l</pre> <pre>(1.0mg/l</pre> <pre>(1.0mg/l</pre> <pre>(1.0mg/l</pre> <pre>(0.01mg/l</pre> <pre>NA</pre> <pre>NA</pre> <pre>NA</pre>
CN (Tot) <1.0mg/ks Sulfide (Tot) <1.0mg/ks Chlorine NA Flashpoint >140 deg Paint Filter pass Total Solids NA ph	





PDC Laboratories, Inc.

4349 Southport Rd. • Peoria. IL 61615 3894-676-4893

		CLIENT	Warzy	n Engineer	ing	
		DATE RECEIVED	06-28	-89		
		DATE OF REPORT				
		SAMPLE DESCRIPTION				
		P.O. NUMBER	James	Wink		
		LAB NUMBER	90655	8		
		CAT- VANCOS				
LAB NUMBER		ANALYSIS		RESU		
906558	Total Phenol	CONTRACTOR OF THE STATE OF THE	-	4.1	mg/kg	
-	EOX			<12	mg/kg	
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(Laboratory Manager PDC Laboratories, Inc. Subsidiary of PDC Technical Quarkity Assurance Officer PDC Laboratories, Inc.